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Computer Weekly

RECRUITMENT AND EDUCATION SUPPLEMENT

Thursday November 11 1982

Where demand for DP staff is growing

UK professionals are sought after overseas says Mark Wenck

GETTING rich quick is something most DP professionals cast aside at a tender age. But a select band of DPs have been going abroad to seek their fortunes.

Most overseas recruitment consultants this year recorded a demand for staff unaffected by a worldwide recession. The UK DP professional, it appears, is a much sought after individual.

Despite the unstable nature of the Middle East, demand for UK computer staff is growing there. The opportunities in the US have also grown considerably in 1982.

Tony Vickers, head of international operations at VLI Recruitment said: "In the Middle East the big oil producers and banking organisations are embarking upon an exciting DP installation."

"There are two main reasons why they go for UK staff. Firstly there are the existing historical ties - the Arabs have traditionally done business with Britain."

"Secondly there's the fact that the Americans were largely instrumental in opening up the computer business in the Middle East - hence the desirability of English-speaking staff."

For those considering a job in the Middle East, money is the prime (and in many cases the only) factor. Vickers said: "For a man with five or more years practical experience we're talking about something in the region of £20,000 a year plus, with very little taxation."

And according to Joe Haynes, of consultancy Compac: "People going to these Arab installations will encounter the very latest state of the art equipment."

"When they return not only are they richer but they possess up-to-date, saleable skills."

The Middle East is still very much the domain of the single male. Most of the Arab nations are, if anything, undergoing a state of retrenchment in terms of Islamic culture. Regrettably this leaves little room for the Western idea of the career woman.

Neither Vickers nor Haynes sees the Middle East as a place to take one's wife and kids.

All recruiters also agree that the Middle East can be a hostile environment. Cultural and environmental differences can take their toll.

Most Arab countries outlaw alcohol, while accommodation can be less advanced than computer hardware.

Most recruiters set highly stringent qualifying tests. VLI, for instance, presents applicants with mini-exams in their specialist areas. They are also assessed in terms of ability to deal with the sort of life they are likely to find in the Middle East.

Once there, the work still has to be done before you collect your pot of gold. Vickers said: "Almost without exception, people going to the Middle East work on new development projects, putting in the hours that

such projects require." Because those moving to the Middle East will often find themselves team-leaders on high-level, specialist operations, the recruitment consultancies tend to deal with high-calibre people, and competition for places can be tough.

Again, UK DPs seeking to work in the US are likely to be in it for the money. Salaries for specialists with some five years' experience could be about £20,000, although taxation in the US is more of a factor than in the

US. Mike O'Connor of consultancy Programming and Systems said: "On the whole the big attraction of the US is the lifestyle."

"But this can sometimes backfire if, for instance, a UK man finds himself in a large manufacturing organisation in a bleak industrial area in the North-east."

Another advantage is that family people can apply. The chief demand is for IBM specialists, but there are a fair number of opportunities for those with Univac and Digital Equipment backgrounds.

According to Vickers, the US is unlikely to meet its own growing demand for programmers and analysts in the near future. VLI's US business expanded to \$1 million this year and is likely to exceed \$10 million by the end of 1983.

Western Europe is another major overseas recruitment market, but smaller than the other two, mainly owing to the language problem. When Western European output turns to the UK for staff the often want specially qualified individuals.



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WALDEGRAVE... "It should be possible to find the money."

Call for a Perq in every poly

by George Black
LOCAL education authorities have been pressed to spend more on computing equipment for polytechnics by Education Under-Secretary William Waldegrave.

Speaking at a demonstration of ICL's Perq workstation at Queen Mary College, London, he said: "I'd like to see several of these machines in every university and polytechnic in the country. Even in the present tough times it should be possible to find the money."

Under a special offer from ICL, polytechnics will be able to buy the Perq through local education authorities at the same reduced rates as the universities.

The Education Department has just ordered 50 for use in universities as an Information Technology Year initiative.

Waldegrave added: "The Perq has a very powerful software package with an extremely wide range of applications for virtually every academic department."

Henry Norton, secretary of the Computer Board for Universities and Research Councils, said: "It's worth spending money on a standard, powerful machine like this which it avoids duplication of

effort on software by using various less powerful micros."

Universities have been allowed to buy the Perq, with one megabyte of memory, for £15,900 each - 28% off the hardware's market price. And they will also get 90% off the software price. Queen Mary College, as primary licence holder, will co-ordinate distribution and development throughout the country.

The Science and Engineering Research Council has already ordered 100 Perqs and the Education Department has taken delivery of its first 30.

With its A4 sheet-sized screen, the Perq has been exclusively Pascal-based under its own operating system, but this week brings in C language running under Unix and will follow soon with Fortran. Many applications under the POS will become available under Unix, including Gino, Nag, Grafiks, Glim and Pafec.

The Severn Trent Water Authority has tied itself to ICL for the next seven years in a contract worth over £12 million. The deal is one of the longest won by ICL and covers the water authority's next four hardware upgrades.

IBM gives in to its users on price rises

by Kevan Pearson
THE IBM Computer User's Association has won important concessions from IBM in its battle against the company's six-monthly price rise policy.

IBM has, in so many words, agreed that it will abandon its policy of two price rises a year, and it will consult much more closely with the CUA on this and other matters. The company, however, will not withdraw the September announced price increase which sparked off the controversy.

While the CUA will be disappointed at IBM's unwillingness to cancel the latest increase, which comes into effect from December, it will no doubt be pleased that IBM has not proved as intransigent as might at first have been imagined.

In a series of letters to John Grant, chairman of the CUA, IBM has attempted to justify the last increase, which the CUA said would increase members' costs on average by about 14%.

But Grant feels he had two very strong bargaining points: the 30% hike in IBM world trade profits, and price cuts on the 4300 series and other small systems of up to 34% in the US. Last week IBM repeated the 4300 price cuts in the UK, though by up to 25%, only on the 4331 and 4321 models.

IBM's constant line of attack on

the CUA's criticism has been that purchase prices, the most significant item in a purchase decision, have actually fallen since 1979 when the twice a year price became reality.

IBM's own figures show that the price of the 3033, soon to be discontinued, is down to 48% of its value in 1979. While the drop in the price of the 4341 is 11% over the period.

But maintenance on both the 4341 and 4331 models has risen by 41% and 39% respectively in the same period, and lease/rental charges on the same machines have gone up by 38% and 35% respectively.

It is these rises that the CUA found so unacceptable. The CUA argues that user budgets are based on the prices quoted at the time the budget is drawn up, and that prices could have gone up twice, in some cases during the period of a budget.

Furthermore, the cut in purchase prices not only did not provide any benefits for users who have already bought machines, it also reduced the residual value of these machines.

Tony Cleaver, IBM's assistant general manager in the UK, has undertaken to ensure that "full weight is given to your (the CUA's) views in future price rises."

Grant says "IBM underestimated user reaction to the present price rises."

"When Tony Cleaver was at IBM UK before, he had a very good relationship with the CUA. He went to IBM Europe, but now that he's back as UK assistant general manager we are looking forward to continuing that close relationship with him," Grant explains.

IBM has made the UK announcement of two new models of its 4341 small mainframe range. The 4341 model 9, an entry level system costing £62,000, and the model 11, a top range system

offers Unix and Basic operating systems; Ethernet and HP networking, and Pascal, Fortran and C languages. First deliveries of the single processor HP 9000 series 500 will begin in December, with volume shipments by March 1983.

Announcing the workstation at a worldwide satellite teleconference, executive vice-president Paul Ely called the product a breakthrough in the technical markets, and said it gives the best of both worlds: "Distributed networks of individual computers, as well as the big mainframe benefits of sheer processing power."

With up to three central processors in every unit, the HP 9000

FILETAB Support Services last week failed to gain an ex-parte injunction against fellow software house Ace Microsystems. The aim was to prevent Ace showing its decision table based language compiler "D" at this week's Compec exhibition.

No injunction was granted. At the hearing on Friday last week, the judge ruled that there was no case, and Ace did not even have to speak on its own behalf.

WANG Corp has announced first quarter results which show that revenues rose 29% to \$305 million from last year's \$236 million. Profits rose even faster at 39% to \$25 million, compared with \$18 million for the first quarter of last year. Even more heartening for Wang was the rise in new orders, which were 32% ahead of last year's. Performance in Europe was particularly strong, said Wang.

Turnover 125% up
SUPER Sirius marketer ACT has turned in first half profits 66% up on the same period last year. Profits were £791,000 pre-tax, compared with £475,000 for the six months to September 30 last year. Turnover has jumped a phenomenal 125% from £3.65 million for the six months ended September 30, 1981 to £8.03 million this year.

Zygal injunction
A COURT injunction has been granted to Zygal Dynamics, a terminal distributor which last month bought up the cash-strapped modem manufacturer Modular Technology, against its former owner John McNulty, preventing him from using the name Modern Technology which he had registered as a new company.

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JBA

Programmer/Analyst Southern Home Counties

An immediate vacancy exists for an experienced ICL Programmer/Analyst to work within a small data processing section of a major international manufacturing company. Our client is in the process of completing a large scale data processing project including production planning and control and accounting routines. A minimum of 2 years' experience of COBOL combined with some systems analysis is essential. A knowledge of OMAC would be an advantage.

Contact: Stephanie Twigg in London

Analyst/Programmers RPGII - 834 & 838 London

We are currently seeking experienced ANALYST/PROGRAMMERS, to fill a number of positions based in the London area. The successful applicants will have 1-2 years' RPGII programming experience and would recently have completed at least one major project. A sound knowledge of IBM S34 or S38 being essential. These are genuine opportunities which will offer excellent career prospects and a chance to work in a challenging team environment.

Contact: Alan Green in London

Manufacturing and Distribution Consultancy

Increasing demand in the manufacturing and distribution sectors has highlighted the need for our client, one of the major U.K. systems consultancies, to recruit consultancy calibre staff in these areas:

Manufacturing and Production

They wish to identify Production Engineers who can make an immediate and significant contribution in consultancy activities. Likely assignments will include the optimisation of manufacturing resources and profit improvement planning.

Distribution Systems and Strategy

Candidates experienced in the implementation of distribution, planning and control systems are being sought. A knowledge of: * Warehouse design, layout and operations

* Materials handling * Inventory management and control would be appropriate.

Contact: Margaret Stevens in London

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Tel: 01-439 9311

Gateway House, 50 High Street,
Birmingham, B4 7SY.
Tel: 021-643 7865

Programmer/Analyst East Anglia

Our client, a successful printer well established in the use of computer technology for complex text handling and database applications. Through growth they now need an additional Programmer/Analyst to join the Technical Department Team. (The right candidate may be appointed as Deputy to the Technical Manager). A challenging range of duties will include customer technical sales liaison, development work e.g. interfacing with other systems and new text database developments, feasibility studies, regular program maintenance, monitoring of production, etc. Candidates should have a degree in Computer Science or a related subject, with a minimum of several years' industrial background in computing. Significant programming experience must be demonstrated, preferably in FORTRAN or BCPL. In addition, candidates should ideally have text handling and database experience.

Contact: James Baker in London

Systems Programmer East Anglia

Our client specialises in the development and marketing of applications software products and is keen to expand their SYSTEMS SOFTWARE team. An IBM 4341 with an unusual array of software tools supports this rather special environment and because products are also produced for other mainframes the need to interface with a wide range of hardware provides a stimulating technical challenge.

Applicants should have solid experience of IBM systems programming, ideally involving a DOS operating system. Proficiency with Assembler would be appropriate and familiarity with other mainframe environments would be a bonus.

Contact: Bev Stevens in Birmingham

Project Manager London

The COMMONWEALTH SECRETARIAT, who are responsible for co-ordinating major studies within the Commonwealth countries, require a Project Manager to take responsibility for introducing the use of computers into their London headquarters. The person appointed will be responsible for the entire project - from defining the future computing needs of the organisation, through to the procurement and implementation of suitable hardware and software packages. Suitable candidates are likely to be graduates, with at least five years' d.p. experience, and be aware of the latest developments in local area networks and database. Proven project management ability is essential.

Contact: Stephanie Twigg in London



CAP celebrates its 25th birthday



Compec - a major industry event



Is IBM losing touch with its users?

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Mercury, BT agree on rates

by Donald Kennett
MERCURY Communications and British Telecom have at last hammered out the terms for connections between their two networks.

The government had asked to be informed by July 30 if talks between the two had reached a deadlock. But despite being "exceedingly tough", negotiations remained "entirely friendly", according to a Mercury spokesman and both parties preferred to press on without government mediation.

Mercury will make a "modest annual payment in consideration of BT's entering into the agreement", but otherwise BT will charge Mercury the same rates as it charges its other customers and any non-standard service charges will be calculated on the same basis as for other customers.

The arrangement will avoid the need for Mercury's customers to

pay two separate bills where their connections use both networks.

Three types of connection between the two networks will be involved - where a customer reaches the Mercury network via a BT leased line, via a dialled call through BT's network and via equipment such as a private exchange that is rented from or maintained by BT.

The agreement runs for 15 years, the same as the minimum period for Mercury's operating licence.

International connections are being negotiated separately with British Telecom International and agreement is expected soon.

Mercury is to start operating in London next spring using microwave radio links. In the autumn it is to be extended to Coventry, Birmingham and Manchester by microwave links costing £17 million. These will be replaced

by optical fibre cables laid alongside railway tracks, while the microwave equipment is used to set up the next sections of the network.

The network will be extended to 30 major towns using £50 million worth of optical fibre cabling by the end of 1985 and more beyond that as demand grows.

Mercury will have its own ground station near London for international satellite links to the US via Intelsat.

But it has delayed inviting tenders for the supply of the ground station because it has yet to find a suitable site with good access to access to London and low electromagnetic interference.

It has also delayed ordering the optical fibre cable because the government's plans to allow multi-channel cable television networks are changing Mercury's estimates of the capacity it will need.



GIBBENS... "We had to get the Post Office to put a new entry classification in the Yellow Pages."

No solemnity at CAP's celebration

by Ron Coates
THE UK's oldest software house last week celebrated its 20th birthday at London's Barbican Centre.

Computer Analysts and Programmers, better known by the acronym CAP, insisted that the occasion was a "celebratory" one rather than a celebration because, according to chairman Barney Gibbens, celebration had overtones of solemnity which he wished to banish.

Gibbens managed to avoid

solemnity for most of the evening apart from a heartfelt reference to CAP's all too recent problem years. He said: "This is not to say that we did not have our nights of prayers to the gods of private enterprise."

He recalled: "In 1962 there was no such thing as a software house. We had to get the Post Office to put a new entry classification in the Yellow Pages."

And he pointed out that many of the ideas put up by his generation

of software people were only the machines of the 1960s.

"We are now going through a period of rediscovery of the techniques of 20 years ago."

Gibbens added that he searched his experience for the rules that should govern software houses, and he claimed to have found them posted in a list. They were: "Be efficient, be nice, be nice to your friends, keep your hands clean and no kids in the playground."

'Japan can't deliver 5th generation'



DORN... "Misplaced enthusiasm."

by Andrew Thomas
THE fifth generation is not destined to come from Japan.

That was the view expressed Monday by US consultant Phil Dorn, speaking at the Pergamon InfoTech State of the Art Review. He claimed that the Japanese only score in comparatively low-technology industries and lack the innovative skills to lead the world in computing.

"The Japanese will not dominate the next generation even with help from intellectual elites who hate IBM blindly," says Dorn. "They have an outstanding ability for low-cost, high-volume

production, but do not appear to have a great receptivity to new ideas or aptitude for high technology."

"It is extremely difficult to name a single major idea in computing, hardware or applications, that came from a Japanese source. The only real exception is Pac-Man."

And Dorn also asks whether the current enthusiasm for the fifth generation among industry pundits is misplaced, stating that most companies are more concerned with running the business than installing the latest computer technology.

Dorn states that computing resources devoted to financial and administrative applications only account for 25% of the total resource, and marketing and manufacturing total 45%.

"Raw technology is moving ahead steadily, but software seems to have stalled and little progress has been made for most users. The hardware is faster, more reliable and a good deal cheaper, but it is still used on the same tired application and in nearly the same way as 15 years ago," he says.

But Dorn's attitude towards the fifth generation is perhaps best summed up in his question: "Why bother with a fifth generation when we haven't been able to handle the last four?"

Maurice Wilkes of DEC agrees with Dorn's observation on the state of software.

"The time was when you built a shiny new computer, you'd invent a shiny new language to run on it, but not any more," he says. "Now what happened to languages will happen to operation systems. The transportable operating systems are the future, and we're not far away from standards now."



FULLER... IBM headaches.

Leasing firms hit snags on maintenance

by Kevin Pearson
MAINTENANCE headaches are worrying the independent IBM leasing industry.

Some IBM branches are refusing to take equipment brought into Europe from the US into maintenance, except on an expensive Request Price Quotation basis, or on a time and materials basis. John Fuller, managing director of independent leasing company PCML, cites a Midlands company which was told in writing by its local IBM branch that if it purchased equipment from PCML brought in from the US it would not be taken into IBM's standard maintenance contract for 12 months.

This, says Fuller, is totally contrary to policy stated by IBM's Industry Relations section, which deals with other companies in the computer industry.

Normally restrictions like this apply only to the free maintenance period which comes under the warranty and installation clause in a lease or purchase contract.

Portable suppliers take aim at IBM

by Robert Parry
Portable personal computers have moved upmarket. Portability alone seems no longer enough for the latest entrants - and they are turning to a new emerging micro trend - compatibility with the IBM Personal Computer.

Canadian company Dynalogue was the first to go for this market niche, when it launched the Hyperion in June. The Hyperion weighs 20lbs and Dynalogue aims to undersell the IBM PC by around \$2,000 for machines of the same capacity while cashing in on the market for computers-to-tuck-under-your-armchair-seat forger by Adam Osborne with Osborne 1.

The market is livening up quickly with the appearance of portable IBM look-alikes from US firms. Texas-based Compag Computer has been quick off the mark with a machine which is claimed to be directly compatible with IBM PC software and with the add-on hardware making its way on to the IBM PC market.

The Compag machine will also sell for less than a comparable IBM PC. At \$2,995 for a 128K single floppy machine, it is about \$600 cheaper.

The company was founded only nine months ago, but it carries a good pedigree. It easily raised \$10 million in start-up funds from venture capitalists, including the well-respected Sevin-Rosen partnership. Sevin is founder of semiconductor manufacturer Mostek, and Rosen is an influential industry observer and newsletter publisher.

Last week portable terminal specialist Computer Devices joined the fray by unveiling a

portable personal computer. Dot. Like the IBM PC it uses Intel 8088 processor and runs MS-DOS operating system. It has two expansion slots which IBM bus-compatible, but no compatibility ceases.

Dot uses 3 1/2-inch minidisks from Sony, rather than 5 1/4-inch floppy drives like the IBM, so it cannot use the disc media - unlike most look-alikes coming onto the market.

Computer Devices' president, Seaford Lyle, says that the machine has optional built-in printer and modem, outperforms IBM PC and the DEC Rainbow.

While all this activity goes on, the 16-bit reaches, eight machines continue to grow in popularity and capability. The Osborne leads the field, and despite performance disadvantages compared to the 16-bit devices, will continue to beat them easily on price. It is principally on the wealth of software included in the Osborne price tag.

The Osborne faces increasing competition from British newcomer ITCS, which has just come out with the first portable computer to include a Winchester disk drive and from Japanese micro Sord, which is offering the portable version of its M23 machine in this country now.

According to David L. Pryce, managing director of ITCS, orders are flooding in for the 16-bit machine, particularly the Sord, and he is dealing with Ryman, the software and office equipment chain, to stores to carry the Zita range.

Protection Bill is spelt out in detail

by our Parliamentary Correspondent
LADY Young, Leader of the House of Lords, has spelt out the government's plans for the forthcoming Data Protection Bill in greater detail, during the Lords debate on the Queen's Speech opening Parliament.

And she has made it absolutely clear that the Bill will not apply to data held in manual form - the source of concern particularly to Labour MPs.

She said that the Bill would also be limited to information held about individuals.

The Bill, said Lady Young, would provide members of the community with new rights to protect them against the misuse of information on computers. The government wanted to provide reassurance that personal information held on computers would not be abused or misused.

The Bill would also put the UK in a position to ratify the Council

of Europe Convention on Data Protection.

Effect would be given to proposals in the White Paper published last April by establishing an independent registrar, who would be the key figure in the new arrangements. The registrar would maintain a register of all users of automatically processed personal data, subject possibly to exemptions discussed in the White Paper.

Lady Young said that under the Bill it would become a criminal offence to use automatically processed personal data without being registered. Through the register, it would become possible to know the extent to which personal data was processed and enable citizens to discover who might be processing data about them.

The registrar would be charged with the task of ensuring that users complied with certain general principles on data protection which were included in the European Convention. These principles

concerned the collection, use and disclosure of data, their accuracy and relevance and the measures taken to keep them secure.

The registrar would be empowered to issue notices against a user breaching any of these principles, and non-compliance with such a notice would be a criminal offence.

The Bill would also provide a right for individuals to have access to data held about them, and to have the data corrected or erased if they were held in breach of any of the general principles.

Additionally, new civil remedies would be created by the Bill to enable someone who suffered damage to get compensation.

Lady Young stressed the increasing importance of the UK providing for data protection because of the action being taken among the country's trading partners.



LADY YOUNG... Bill is limited to information held about individuals.

French govt databank centre accused of commercial interest

by Jack Gee
TELESYSTEMES, the French State-owned host centre for scientific and technical databanks, is under fierce attack by political opponents of the Socialist government for buying a controlling stake in a leading commercial database.

The purchase of 52.43% of the capital of Union Française d'Annuaire Professionnels has become the target of parliamentary questions which are seriously embarrassing the government.

Telesystemes is a subsidiary of the French telecommunications authority which has received a FF100 million (£8 million) subsidy from the national exchequer.

Telesystemes reports it has sold 40,000 hours in three years, so the subsidy works out at FF2,500 (£200) an hour.

French Telecom enjoys a monopoly of data transmission in France over Transpac, its packet switching network. But the authority's code of behaviour forbids it to get involved in the information content which it transmits.

The purchase of a controlling stake in the UFAP databank is being challenged in Paris as a serious breach by French Telecom

of its own charter.

At the opening of Telesystemes' host centre at Valbonne, Southern France, three years ago, the late Minister for Telecommunications Norbert Segard said: "French Telecom will not intervene as a service provider in any case except in traditional fields like telephone directories."

French Telecom has paid an advance of FF5 million (£400,000) for its stake in Telesystemes. It will have to foot the bill for a FF2 million (£160,000) loss in 1981. Telesystemes' profit of about FF6 million (£480,000) is well below its subsidy.

Bernard Stasi, a former cabinet minister, has put a question in the National Assembly to Telecommunications Minister Louis Mexandeau about Telesystemes' involvement with UFAP. Stasi asked: "Is not this situation a breach of the code which governs the telecommunications authority and forbids it to undertake any circumstances to control the production of information?"

"What measures do you intend to take to ensure that French Telecom's subsidiaries respect the traditional division between the production and transmission of information?"

IBM-compatible to sell turnkey packages

by Howard Karten
STORAGE Technology Corp., best known as an IBM-compatible tape and disc manufacturer, recently established a subsidiary to market complete IBM-compatible turnkey packages.

STC Ultimate Systems in Wildwood, New Jersey, will market two turnkey packages based on the Magnuson M80/30 series CPUs.

The systems will be sold fully configured with STC peripherals and STC-modified application software, and users will be able to use only STC disc and tape drives. Printers will come from Documentation, a Melbourne, Florida printer manufacturer acquired earlier by STC.

STC was previously working closely with Magnuson on its virtual storage system, a project scrapped by STC in early August.

Ultimate will have its own sales and maintenance force, operating at least initially out of STC branch offices. The subsidiary is still in the process of gearing up, according to STC USI sales vice-president Gil Kellersman.

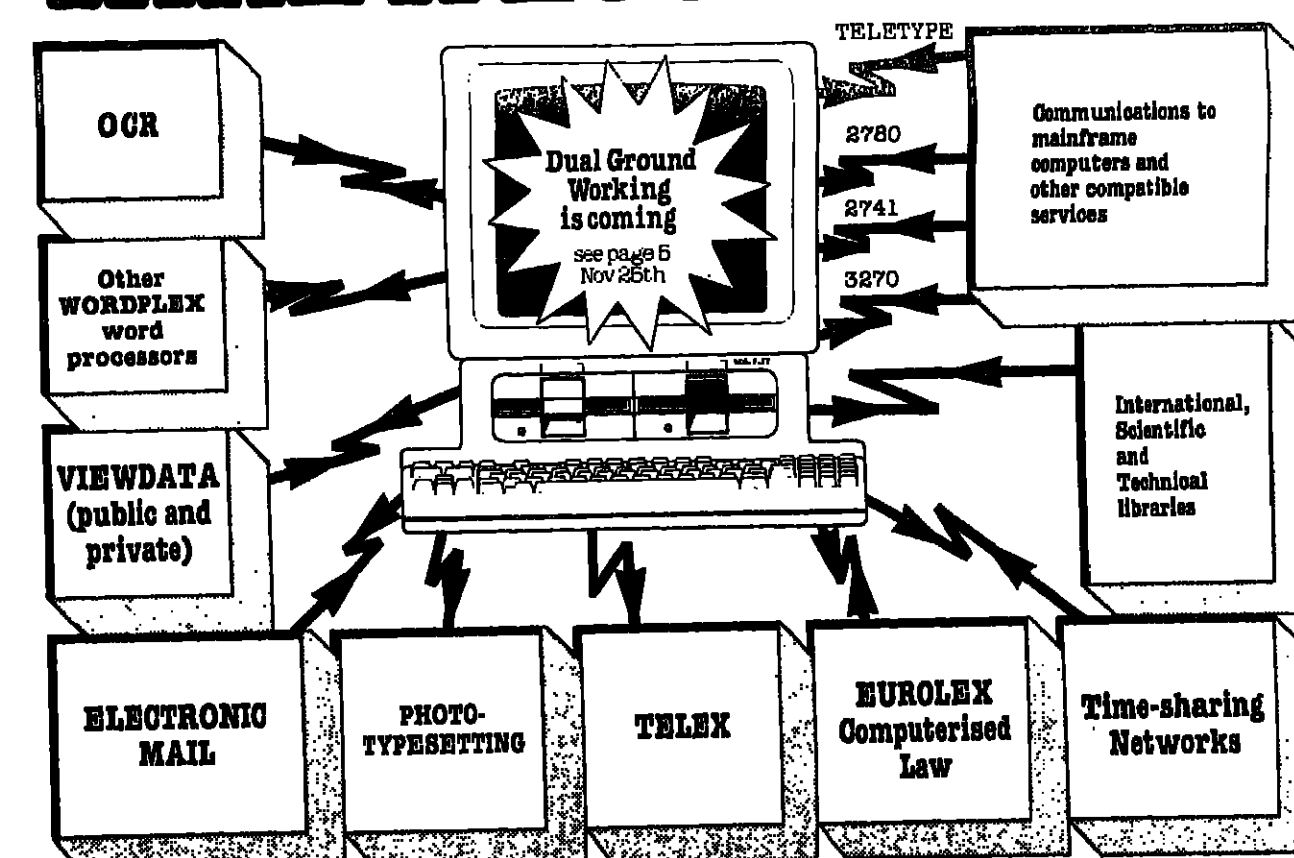
STC USI is currently operating in a phased start-up mode, and will be adding branch offices in the future. The company currently has no firm plans to market its USX39 and USX40 systems overseas.

Magnuson has been in financial difficulties, and recently worked out a bailout plan with its backers and creditors. Magnuson had a net loss of \$8.8 million for the first half of 1982.

Kellersman noted that although his company was now, in effect, single-sourcing its CPU, it could change to another CPU supplier with relative ease should it prove necessary.

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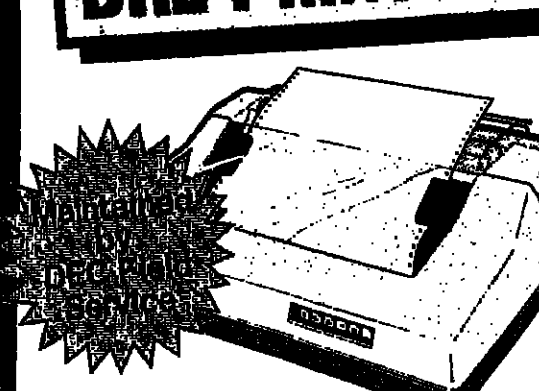
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Microdata loses race for CMC

by John Riley
PHILIPS has beaten Microdata, the US-based small business systems maker, in a race to buy the key-processing division of the bankrupt CMC France which has been administered since July by the French government and banks.

Microdata has bought the CMC companies in Germany and Switzerland, and was looking to CMC France to complete its set of European CMC companies.

The US-based Computer Machinery Corporation sold off its European subsidiaries in the 1970s to various buyers.

CMC (UK) was bought from the US parent by its own management, and then bought by Microdata in 1978. Microdata was itself a subsidiary of McDonnell Douglas Corp. The only connection with Britain is that CMC in Europe has been a regular cus-

tomers of CMC (UK).

Up to a week ago Microdata was confident that it would be successful in acquiring the CMC France key-processing division. But now the Paris-based Philips Data Systems will take on from 100 to 140 personnel from the division.

The information processing division of CMC France has been bought by Data 100, the French subsidiary of Northern Telecom. Data 100 will take on about 20 people. The future of the remaining 225 employees is still uncertain.

Carl Brandt, vice-president of Microdata European Marketing, Sales and Service, said: "You can't win all the time. However, this will not stop our expansion into France. We will certainly start a company in France although it will now take a little longer than planned".

Microdata began its drive into Europe with the acquisition of CMC West Germany and CMC Switzerland. Both now come under the Microdata name, and most of the employees will be integrated in the German Microdata and the Swiss Microdata Business Systems.

In addition, Microdata recently signed agreements with two computer leasing companies, Nordic Leasing International of The Hague and Scandilease of Switzerland, who own the leases on equipment placed respectively by the German and Swiss companies.

Microdata has contracted to supply a maintenance service for certain data entry and communications products currently on lease to CMC customers. Further growth is planned, and Brandt hopes that Microdata will move into France and Holland in 1983, and into Spain and Italy in early 1984.



DUDSON... Expanding Rodime's manufacturing operation.

Rodime to supply £8m of drives for ICL

by Andrew Thomas
ICL has gone north of the Border for supplies of 5¼ inch Winchester disc drives for its small systems.

In a three-year deal worth £8 million, five-based Rodime has contracted to deliver drives of up to 21Mbytes capacity for use in the ICL Personal Computer and the DRS and System 25 ranges.

The deal comes within a month of Rodime's first share issue on the New York unlisted securities market, when 1.1 million shares raised \$9 million. Rodime's marketing director, Malcolm Dudson, says that the money will be used for both expansion of the company's manufacturing operation and the development of new products.

ICL has carried out extensive tests of the Rodime drives alongside other contenders for the deal including Tandem and Seagate, and Dudson sees the award of the

contract as confirmation of Rodime's lead in the market.

"We won this contract after a detailed evaluation of its entire operation - products, manufacturing facility, development capability, staff and financial resources."

"The contract was won in the face of stiff competition from Tandem and Seagate and clearly emphasises that Rodime is firmly established in the very forefront of the 5¼-inch Winchester market."

The decision of IBM to manufacture its Personal Computer at Greenock is seen by Dudson as an opportunity for Rodime to gain inroads into the lucrative IBM world, despite as yet unconfirmed reports that the IBM disc deal has been awarded to Seagate.

"Let's just say we've had visitors from quite important US companies," says Dudson.

Teaching micro can be used by beginners

by George Black
TEACHERS will be able to develop lessons on any subject without any computer expertise, using a new system from the National Physical Laboratory at Teddington.

The system was unveiled last week by Information Technology Minister Kenneth Baker. The NPL's invention is to be marketed by BBC Publications, Commodore, Acornsoft and Mantissa.

"There is an extremely wide range of applications which can complement conventional teaching," said the development group leader Nigel Bevan. "And it

doesn't have to be limited to schools either. The principle is the same for the training of staff."

A micro version is to be sold under the name of Microtext.

Non-computing teachers will be able to write their own computer-based interactive teaching material and to edit and rearrange text on the screen. Lessons can be exchanged with other teachers and adapted to particular needs. A student's ability can be assessed by the software and work tailored accordingly.

"This could be useful, for instance, in remedial arithmetic," suggested Bevan.

EEC should get IT together

by our Parliamentary Correspondent
THE government wants more co-operation with the other Common Market countries in developing new technologies, particularly information technology.

Kenneth Baker, Minister of Information Technology recently set out the government's thinking in a speech in Paris.

And now Douglas Hurd, Minister of State at the Foreign Office, has hit out at the danger of the EEC squandering a unique historical opportunity of acting together to develop computers and robotics to seek up demand which might otherwise go to the Japanese.

Hurd has pointed out that the EEC countries' individual home markets do not offer a large

enough base for an industry where volume sales and world market share are the key to success.

The Common Market Commission has come up with some interesting proposals of its own - particularly ESPRIT, the European Strategic Research Programme in Information Technology. British Ministers have been pursuing these ideas through the Science and Engineering Research Council.

Kenneth Baker announced to the Commons a decision to allocate the microelectronics application project - MAP - an additional £30 million as part of the Budget innovation package. Baker said MAP was in sight of exhausting its original funding of £35 million but a lot remained to be done.

SALES BRIEF

ITT in £2m deal to link Euro network

A EUROPEAN network of 18 mainframes is to be linked by 11 million worth of ITT 3800 communications controllers in a contract awarded by Datam, the computer bureau division of ICL.

Mainframes in Stockholm, Gothenburg, Oslo, Copenhagen, Frankfurt and Bristol, each dedicated to one database and running under the DOS/VSE operating system, will be available for set up by all Datam customers.

Tories vote ICL

ICL has won a contract worth £100,000 from the Conservative Party to automate the Lords Central Office. The contract includes an ME29 distributed mainframe, a DRS Model 40 word processor, and two Model 10 intelligent workstations.

Philips phone-ins

THE first two of four Philips BR 8000 computer-controlled telephone systems have been installed in the BBC's national communications network. This is part of a £10 million project shared by Philips Business Systems, the BBC and British Telecom, and is aimed at making life easier during radio and television phone-ins.

Traffic control

AN Urban Traffic Control scheme costing £500,000 is being installed by Plessey Controls in Southampton. The system is based on a central computer which receives data taken from important road junctions, and calculates the best distribution of timings of red lights to avoid jams and bottlenecks.

Water contract

FOUR Honeywell computers have been sold to the British Waterworks company for a distributed system that will administer commercial applications and control of water in the Thames. The contract includes a DPS 7 medium-sized computer, two DPS 6 mini-computers, and a Datam communications processor.

Yugoslav order

ONE of the few Yugoslav computer companies, Istra Elektronika, has ordered \$500,000 worth of magnetic tape transports from the US Kennedy Company.

Wims takes off

BRITISH Caledonian, the independent airline, has ordered a Heathrow terminal from British Airways in 1977, has ordered a £28,500 maintenance package from ABS Computers of Woking, Surrey. The system called Wims was developed by the DHS and provides a database of cost and performance of buildings, planes and equipment.

Disc subsystem

A DISC subsystem for Apple II and IBM Personal Computer users is being built in the US by Vint, a company based in San Jose, Calif. It is being sold at \$1,500 each. Vint has ordered \$5 million worth of multi-disc floppy disc drives from the Amalgam Corporation of Columbia to incorporate in its new Vint subsystem.

Cyber sale

CONTROL Data will next install two of its Cyber 170 mainframes for Sun Life of Canada as part of a £1.5 million order.

Catered for

MEGABYTE, the UK supplier of turnkey systems, has won a £70,000 contract to supply 12 December control packages for the British Catering Corporation.

'Women — seize IT opportunities'

by John Riley
OPPORTUNITIES are there for women in computing. But they will slip from their grasp unless women adapt to the restructuring of British work patterns being brought about by information technology.

That was Ken Baker's message to last week's conference on the impact of Information Technology on Women held at Westminster County Hall.

A less optimistic Shirley Williams argued that we do not know what the effects of new technology will be, and cannot predict them. Information technology has not begun to register yet, she claimed, and argued that job losses so far must be attributed to the recession and to the government.

While Baker conceded that jobs will be lost in manufacturing, he was confident that other industries, especially leisure, will expand, with extra jobs in new areas such as windsurfing.

An enthusiastic and rose-tinted view of the benefits was presented and these included quieter and cleaner jobs, more opportunities through electronic cabling for women and the disabled to work at home, less importance given to physical differences between men and women in the manufacturing industries, and blurring of sexual stereotyping in the office, with, for example, male managers learning keyboard skills.

Baker thought a widening split between skilled and unskilled jobs in the office of the future was "unlikely".

Williams urged better education in technology for all and proposed a unisex Universal Foundation Training Year in which school leavers would learn to live with information technology. She did see fewer women in management positions in the public sector, and was unhappy about this.

Delegates called for a more

humane dimension in discussions of information technology.

Conference organiser Janice Hughes of Small Change, an informal group of women affiliated to Change International, said: "Information Technology Year has been directed towards introducing and marketing electronic equipment, but the people problem has not been tackled."

Hazel Downing, of the University of Southampton's new technology research group, added a pessimistic view by graphically illustrating the misuse of word processors in the US.

The "alternative work culture" where women break their routine regularly in the office would change when they were glued to the controlled environment of word processors.

Downing also stressed that there is evidence that VDUs can be a health hazard and urged the immediate need for proper research in this area.



WILLIAMS... "Information technology has not begun to register yet."

Govt gives thumbs up to Alvey

by Donald Kennett
THE first indication of a favourable government response to the Alvey report came from Industry under-Secretary John Butcher last week.

Speaking at a seminar on videodata and cable television services at the Polytechnic of the South Bank in London, he said: "We are hoping we can use Alvey's report and the four major areas he is asking us to study - together with developments in cable, together with the liberalisation of telecommunications - to produce an explosion in information services."

The four areas are VLSI, knowledge-based systems, software engineering and man-machine interfaces. "I have great faith in Alvey," he added. "If we pursue his recommendations vigorously, we too can have our fifth generation computer. But add to that the UK freeing of information technology with the value-added network services licence and the rest of the liberalisation programme and we can have a world lead."

Systems house funds Edinburgh AI lecturer

by George Black
AN additional lecturship in artificial intelligence is to be set up at Edinburgh University with a three-year grant from the Hampshire firm Systems Designers.

AI department head Jim Howe said it was hoped that the post would be filled in the first half of next year. The new lecturer would specialise in expert and knowledge-based systems.

The department was formed out of three research groups in the mid-Sixties and was later called the Department of Machine Intelligence and Perception. It was created in its present form in 1974. Now it has four permanent staff.

"We went through a lean period in the early Seventies, but in the last few years there has been a growing recognition of the importance of our work, so that we have been more shielded from the recession than other faculties," said Howe.

He was uncertain whether it

would be possible to recruit a British specialist to take up the new lecturship.

Edinburgh has just received its first student intake for a joint honours course in linguistics and artificial intelligence.

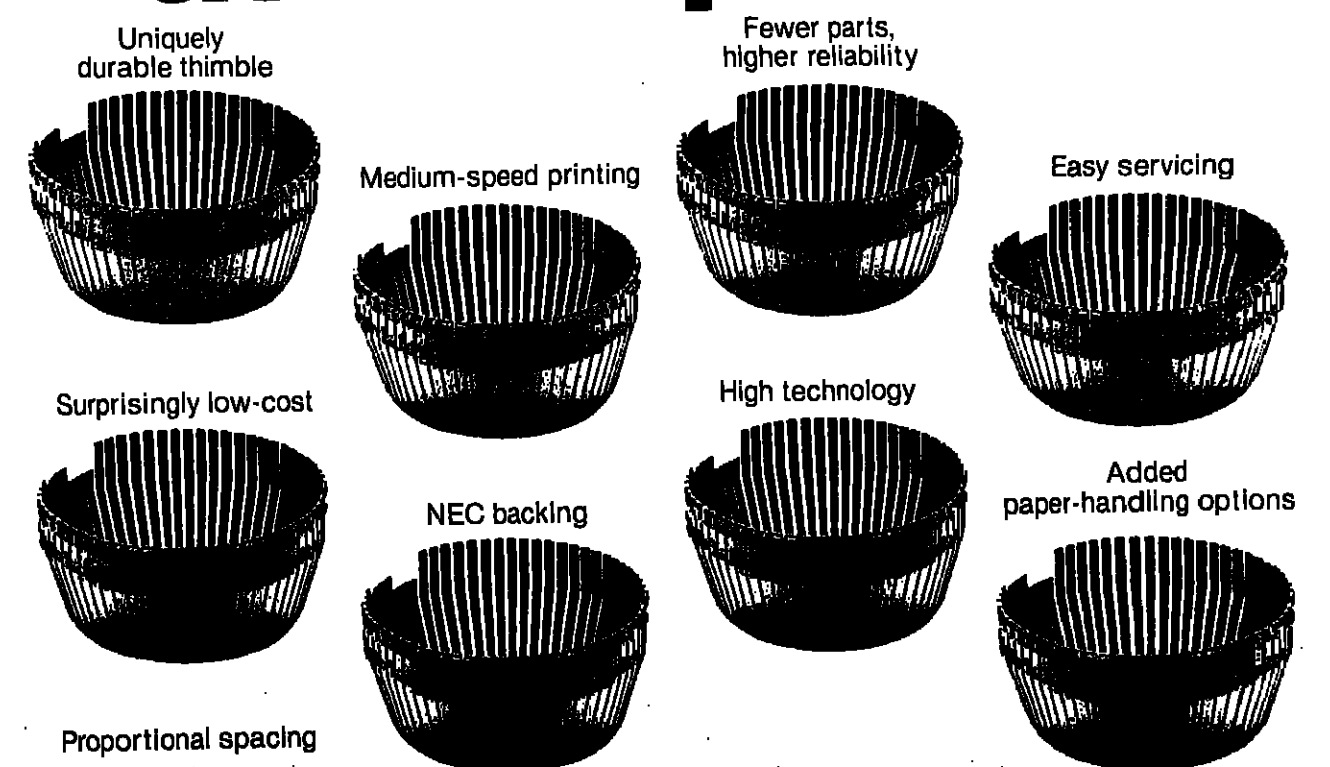
"If it is a success we may try bringing in some joint honours options, but we won't know for a few years how well it is going," Howe added.

Next autumn a one-year MSc in information technology is to be launched.

"Of course it was planned long before the Alvey report," said Howe, "but it does seem to coincide nicely with his proposals."

There are 20 research workers in artificial intelligence at Edinburgh, mostly sponsored by research councils, as well as 35 PhD students and 60 undergraduates taking AI as subsidiary subject to computer science, maths, linguistics or psychology.

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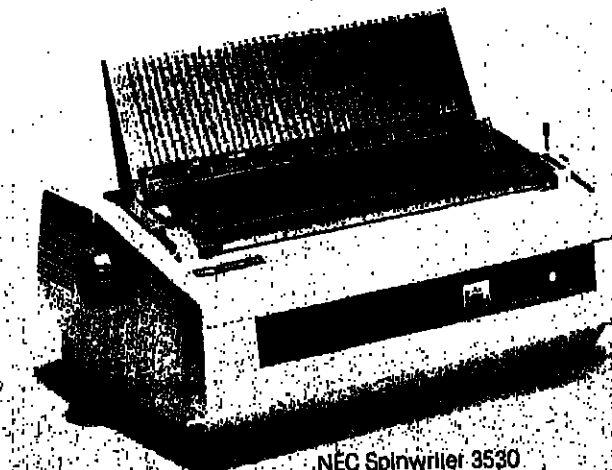
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UK firm runs Unix 7 on 68000 micro

by Robert Parry
BRITISH micro builder Bleasdale Computer Systems is redoubling its attack on the emerging Unix market. A 68000 machine running Unix Version 7 is now up and running, ready for delivery within four weeks, according to managing director Eddie Bleasdale.

"It runs a full implementation of Unix," says Bleasdale, "the real McCoy, not a look-alike version." He claims his is the first 68000-based machine in Europe to run a complete implementation, rather than cut down operating systems based on Unix which only give the user a subset of Unix.

The claim is probably fair

enough for European machines, reckons Emrys Jones, chairman of the European Unix Users Group. But he noted that most users did not use all the facilities available within the operating system. "The trouble is they all want different bits, so for a manufacturer it perhaps makes sense to offer a full implementation."

The 68000 machine is a brother to Bleasdale's Z8000 computer running Xenix, the Microsoft derivative of Unix.

It comes with half a megabyte of memory, expandable to 3¼-Mbytes, 10 Mbytes minimum of hard disc with floppy or tape streamer backup, and can support



BLEASDALE... "£70,000 of orders have been received."

UEI forms fibre optic TV venture

by Donald Kennett

OPTICAL fibre based cable television distribution systems are to be made in the UK by a joint venture between UEI and Times Fiber Communications.

UEI has already formed a joint venture with the Water Research Centre called Cabletime Installa-

tions to run wideband cable networks into homes through sewers. This second as yet unnamed venture with a leading US cable sub-assembly supplier will give it the technology to supply complete systems.

The UEI group consists of Micro Consultants, Link Electron-

ics and Quantel, all of which are involved in high technology for television broadcasting and other image processing markets. The new venture will add a respected voice to the arguments for basing the UK's proposed wideband network on optical fibres and on the switched star layout.

CMG joins sick pay bandwagon

by John Riley

THE latest software package bandwagon is gathering momentum. Both Peterborough Software and IBM's Bureau Service have been publicising their solution to the Statutory Sick Pay (SSP) calculations to payroll systems.

Last week, Computer Management Group, in collaboration with legal authority Bowes Egan, announced its MicroSSP package aimed at small businesses which is expected to be ready in January.

Although the legislation comes into force on April 6, the new information has to start being accessed at least eight weeks before, with SSP systems installed and running by then. All firms with computerised payroll systems will be affected, so many other software houses are beavering away to beat the early February deadline.

There is general agreement that with SSP the front end is 90% of

the problem, and that the integration of SSP information, which needs regular updating and has varying time scales, demands more than a simple amendment to a payroll package.

The general solution is to treat it as a separate personnel function which interfaces to the payroll system. "The implications and general problems of SSP are far greater than those of VAT," said Jeff Phelps, general manager of CMG. "This is a far greater problem than that, and VAT caused enough problems."

CMG, which diversified into software last September, is promoting MicroSSP as an absence control system. This can be bought for use on customers' own micros (only those with a CP/M operating system) at a cost of £750, or used by those running their payrolls with CMG at a cost of £1,000 including £500 installation.

CMG is planning a second product to mainframes and has online capability for their systems, which was demonstrated to the DHSS last week. SSP calculations are treated as a general requirement operating online.

IBM Bureau's system offers calculating options: SSP factor; gross SSP payment; SSP payment; and fully integrated SSP and payroll. A calendar facility is also available to calculate SSP qualifying days.

IBM stressed that this is a bureau solution and would not be whether it is producing a personal version package for IBM users. A clear indication of extra costs for SSP was available from Peterborough or IBM.

Private exchange to test govt's telecoms liberalisation policy

by Donald Kennett

SMALL Systems Engineering is to test the limits of the government's liberalisation policy for telecommunications by launching a private telephone exchange later this month — eight months before its supply ceases to be the exclusive privilege of British Telecom.

Managing director Derek Rowe said: "We needed an exchange for up to about 40 internal and 12 external lines for our premises and everything on the market was rubbish and grossly over-priced."

"So we started designing our own eight weeks ago — it is called the Empire 32 — and the first deliveries will be in two weeks. "Up to 100 non-approved PABXs are installed every month in London and BT doesn't do anything about it," he added. "The market is ripe, BT's equipment is over-priced and there is no way a Conservative government is going to stop it."

From the beginning of this month is an offence to sell equipment which could be attached to BT's networks unless it carries the official label saying whether it has been approved — a green disc for yes and a red triangle for no. BT is entitled to disconnect any subscriber using unapproved apparatus on its network.

A BT spokesman said: "Very few subscribers have actually been disconnected because they usually see the force of our arguments and stop using the equipment on the public network. There is nothing to stop suppliers from preparing to enter the market, but there are no standards to test their equipment against yet."

Rowe claims to have lined up 20 orders already, some of them from his company's suppliers who have seen the prototype when they made sales calls.

The first deliveries will go to Teleterm, a London-based retailer which in the last year claims to have sold 50 of its Ideal range of Taiwanese-built exchanges for five to 10 outside lines and 10 to 30 extensions.

Teleterm managing director Emery Lake said he was dropping the larger models of the Ideal range in favour of Rowe's system because it was easier to keep a local manufacturer informed of user needs. "We collaborated on the specification, so what he's making is what I want," he said. "It uses two-core cable as opposed to 22-core and it has more facilities."

Lake says that the systems have been running since the full knowledge of BT regulations without a single disconnection threatened, so he expects problems with the UK systems.

Rowe's Empire 32 is said to be less than £200 per extension compared with more than £1,000 for BT's system. Features that are unusual include its ability to run without a console by getting incoming calls on to an extension, to have traffic and diagnostic logs output to a printer, and the control of any extension and its ability to set up confer-



ROWE... "The market is ripe."

A number of sophisticated automatic exchanges have been available for many years for communications within one company, the only thing that has prevented their being attached to the public telephone network has been BT's exclusive privilege to supply systems for attachment to the network.

These systems, available from suppliers such as Philips and Plessey, should be among the first to gain approval when the market for PABXs is officially opened up next July.

NOW-for the System /34 and /38-

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Vital statistics that are so impressive the competition obviously have trouble measuring up to them

FEATURES	5251-11	5291	2051
Cable Through	OPTIONAL	STANDARD	STANDARD
Full Size Screen	YES	NO	YES
Tilting Monitor	NO	YES	YES
Non Glare Screen	NO	YES	YES
Auto Dimming Display	NO	NO	YES
Line/Block Cursor	NO	YES	YES
Line/Column Indicator	NO	YES	YES
Desk Space	MORE	LESS	EVEN LESS!
Copy Printer	NO	NO	YES

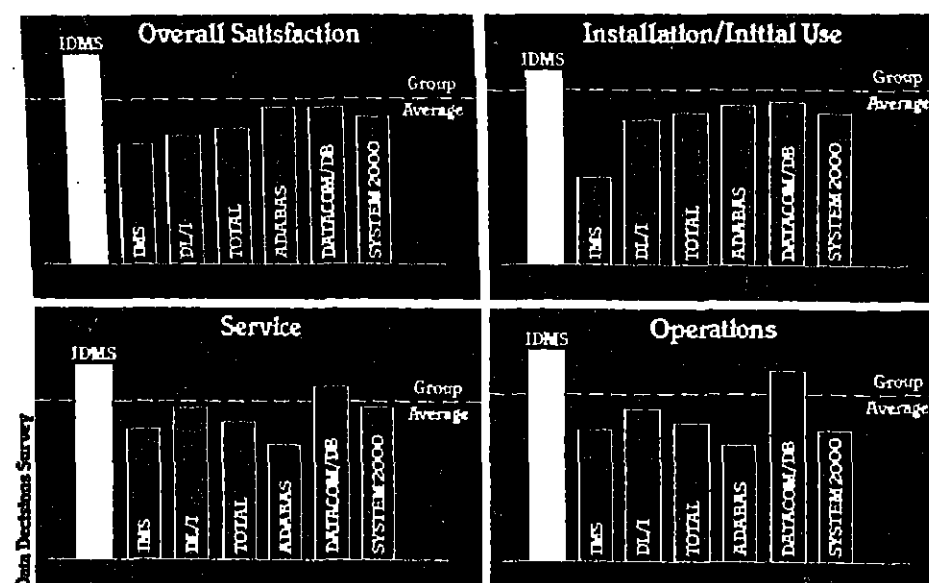
More from Memorex

Contact Phil Astill, Communications Products Marketing Manager, Memorex UK Ltd., 96-104 Church Street, Staines, Middlesex, TW18 4XU. Telephone Staines (0784) 51488.

MEMOREX

MEMOREX

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Data Decisions' 1981 survey shows Cullinane's Integrated Database Management System (IDMS) to be the Number One choice among DBMS users. Yet again, IDMS has achieved higher ratings than any competitive product in the categories of reliability, ease of installation and use, quality of technical support and overall satisfaction. Additionally, the latest Datapro Research survey shows IDMS to be No. 1 in more categories than any competing database management system.

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The concept of exchangeable processors means

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Bridging the gap with banking

by George Black
A LONDON conference in January will bring together financiers and software chiefs to try to bridge the gap between banking and programming.

"The trouble has been that finance people don't understand bytes and software people don't understand loans," said David Elze, manager of the Software Products Scheme.

The scheme, sponsored by the Industry Department, the National Computing Centre and the Computing Services Association, had a £10 million cash injection from the government six months ago which the organisers say will all be used up by next year.

"We shall very probably have to go back to the government for more cash before the next general election," said Brian Cudby, of the Computing Services Association.

The number of applications for government grants - which can cover up to a third of the cost of a project - has doubled in the last six months and, although the organisers have drafted in three extra staff to handle the vetting, it takes four months for approval.

"We know that applicants aren't satisfied with this delay and we are hoping we shall be able to reduce it next year," said Cudby.

The job appraisal scheme, which gets its first public airing at the January gathering, will enable innovators, backers and officials to thrash out worthwhile plans from their outset.

Most of the bright ideas being put forward now concern micro-based systems. Far fewer are in the other "preferred areas" of CAD/CAM (computer-aided design and manufacture) or program development aids.

So far 29 projects have been

accepted and 14 rejected as not up to scratch, although within the required areas of research.

Cudby and Elze believe some of those accepted may end by superseding software already on the market or being advertised.

"We know that everything here has undergone rigorous investigation before launch, which can't always be said of existing packages," said Elze.

Applications envisaged were wide-ranging, from accountancy to building site management. Many of them highlighted the advantages of decentralising data, such as for dentists' appointments, patients' records or estate agent's branch offices. Some involved linking mainframes to micros, for instance for stock control.

"There are half a million companies in this country that might take up these ideas, so it's a huge market," said Elze.



CUDBY... "We shall very probably have to go back for more cash."

Butcher attacked over 'favouritism'

by George Black
INDUSTRY Under-Secretary John Butcher came under fire from computing big shots at a recent lunch party in the House of Commons.

The minister, in a most enthusiastic speech, had declared that protectionism was a thing of the past and had squashed any ideas that British-owned companies would receive preferential treatment from the government.

He went on to wax lyrical about homegrown software, which, he suggested to guests of the East Midlands Allied Press, was set far to take over the European market.

However, some guests responded rather negatively to his exhortations. Up jumped Sperry Univac's Bill Read and pointed out that the much prized German market was by no means wide open, as the Germans tended to translate everything into their language.

Butcher was also pressed to explain how he squared the free trade gospel with favouritism shown to three firms in the educational computing field.

Clive Sinclair then waded into the fray to express his disapproval of any such favouritism - even though admitting it could work out to his advantage sometimes -

and went on to bemoan the fact that he had not been able to buy British chips.

At this point a slightly flustered minister was glad to be able to say that he had urgent business elsewhere in the building, and left.

Butcher had spoken of "mega-opportunities" for British technological skills and stated the government's intention to provide "an environment in which this country can do what it's good at".

Owing to his sudden exit his critics were not able to debate with him whether that should have been "mini-opportunities" or "micro-opportunities".

Burroughs not put off by import warnings

by Jack Gee
BURROUGHS plans to continue to import computers from Britain for the French market, regardless of French government warnings that firms which manufacture in France will be given preference over those which sell foreign-made equipment.

A senior company official said: "We do not consider we fall into the category of companies which only maintain marketing operations in France and fail to provide jobs for French industry."

Burroughs brings in computers from Britain and Belgium as well as US and re-exports over 22% of these, principally to North and West Africa.

The American multinational employs 2,000 workers in France including engineers and operatives at three factories in a triangle centred around the Rouen area in Normandy.

Terminals are produced by a staff of 400 at Rouen and 160 at Louviers operate a print firm, where perforated paper for computer line printers is manufactured.

A third plant at Le Vaudreuil provides jobs for 130 workers, who have been producing software packages since the end of last year.

The Burroughs official said: "We have been operating in France for the past 75 years and never moved out, not even during the two World Wars. We even have a 1922 letter from the French Inland Revenue reminding us we owed taxes for 1919!"

The Burroughs official added: "We are very keen to play a bigger role in France's information technology industry. But we have no plans for the time being to make computers here. We shall be concentrating on existing activities."

IBM memory firms in for a struggle

by Howard Karten
IS THE IBM-compatible, add-in memory business about to fade from memory?

Add-in and add-on memory created widespread interest in 1979 and 1980 by users seeking to save money, but last year saw little market growth, and now, some industry figures believe, manufacturers of IBM-compatible, add-in and add-on memory may be in for troubled times, at least for the short run.

A good deal of the problem was caused by IBM's aggressive price reductions on memory that took place in the US in mid-August, and add-in memory makers have been hard pressed to compete.

The irony is that now that most of the technological bugs have been worked out, and initial user resistance overcome, many customers seem reluctant to take advantage of only modest savings - especially if, by doing so, they will potentially add to their headaches with problems such as running a multi-vendor shop.

In addition, 1982 has hit the entire DP (and semiconductor) industries hard, with lay-off announcements and plant closures becoming almost routine weekly news. These have further affected the fortunes of plug-compatible memory makers - despite the view by some observers that add-

itional memory is one of the most cost-justifiable purchases DP managers can make.

Tom Palfi, president of add-in memory maker Locom, explained: "In the past year, the add-in memory market for the 370/158 and /168 has been slowly eliminated, there has been a slowdown in the 3031 and 3032 systems, and business has been concentrated in the 3033."

In Palfi's view, IBM's August move, dropping the price of a four-Mbyte chunk of 3033 memory to \$64,000, "has virtually eliminated this whole marketplace."

Locom's sole product at this point is its LCM-300 add-in memory. Thus Palfi said, his firm has been hard hit, even though it sells add-in memory for approximately one-half IBM's price. The problem is that the potential saving of \$32,000 is insufficient to justify the potential problem of dealing with two suppliers.

The two biggest memory vendors, outside of IBM, are probably Locom and Camber, a Waltham, Massachusetts manufacturer of add-in memory for IBM systems. According to Camber sales vice-president George Saupe, 1982 probably represented a transition year, in that before 1982, the 370/158, /168, and 3031 were still seen as having enough residual value to justify putting more

money into them.

However, for this and coming years, the drop in value of that hardware, both in absolute terms, and in price/performance, makes other options more attractive to users seeking greater value.

The long-term outlook for memory is limited, according to technology analyst Harry Edelson of New York stock brokerage the First Boston Corp. "It's a limited market now for vendors because of the low prices, compared with what it used to be, and because of IBM's ability to ship massive amounts of memory."

"There is always a niche, and there's a niche for smaller companies... The question is, can these smaller companies keep growing."

However, next year could be significant for IBM 3081 users, predicts Camber's Saupe. His company will be introducing a 3081 add-in memory.

Control Data is similarly optimistic. "We're finding that memory is an easier sell, because 30% to 40% of IBM CPUs already have independent memory," said Michael Gluck, vice-president for Peripherals Systems Marketing for the Minneapolis-based firm. Like Locom and Camber, CDC sells add-on memory that takes some IBM CPUs beyond the memory limits provided by IBM.

Israeli manufacturer opens in Paris

by Jack Gee
EXATEC, the Israeli computer firm, has added a French base to its Belgian headquarters for Europe to mark the advent of a new generation of IBM-compatible products.

Eddy Sterngold, joint managing director, said at the opening of the new Paris office that the French

capital had been chosen because France possesses the biggest range of software houses and service bureaux of all Western European countries.

Jean Nicholas Clerc, commercial director for France, said: "The market lacked a system to enable software houses to maximise their efforts. I believe Exatec France

will succeed with the support of French software firms who wish to develop new markets."

Exatec's research and development began in 1978 in Israel with the target of creating a computer which would be software-compatible with IBM's S/32-series - and especially with S/34 - and programmable in RPG2.



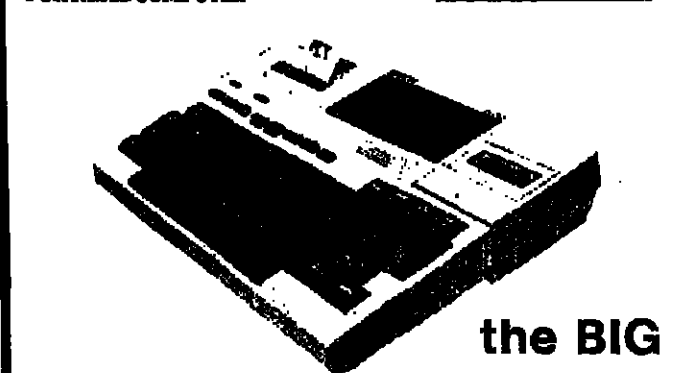
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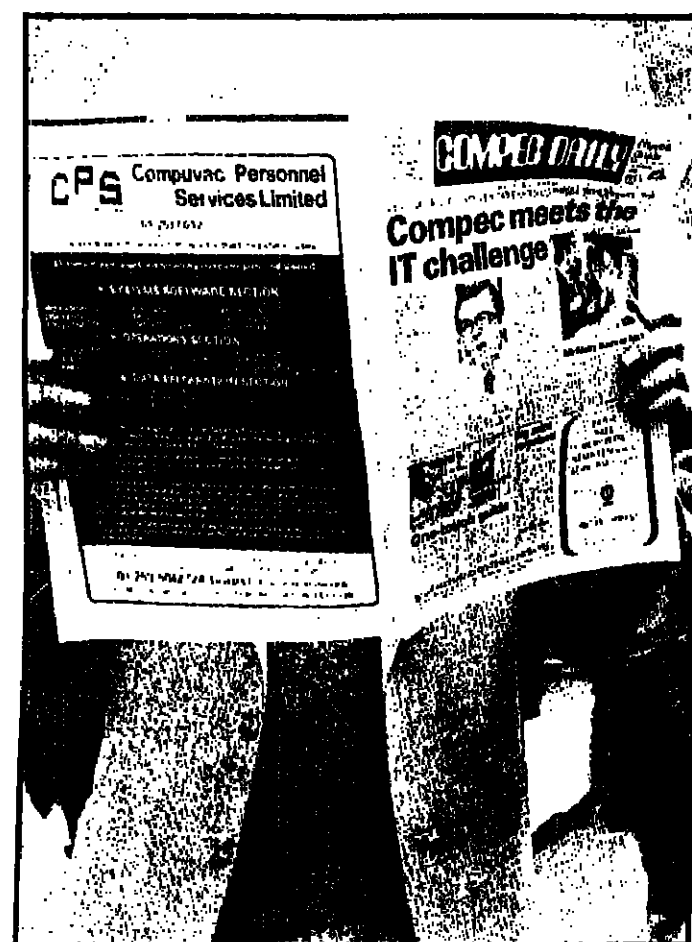
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This year's Compec innovation, the Daily, and reader.

Professionals are out in force at Compec '82

THIS year's Compec is marked by an exuberant professionalism. A few of the old guard are heard complaining about a lack of colour and flair, but most of them have repeated the same refrain for the past five or six years.

For the colour is still there. It is only slightly concealed behind well-thought-out marketing strategies and high-quality stands. And the last-minute panics have been the result of careful planning pulled off successfully.

In Software Village, Phil Gowson of Advanced Software Technology was showing off a bit of hardware. He had just walked off the plane from Atlanta, Georgia with a working model of the CompuCase portable computer, which is briefcase sized (only 5½ inches thick), in one hand, and the BBC distribution rights to marketing and manufacture of the system in the other.

His main comment was that he was jet-lagged, but he quickly added that he planned to sell 5,000

of the machines this year in the UK and Europe. As we chatted, he was busy checking to see that the micro had survived the trip without some glitch or jet-lag of its own.

Trend's stand featured a Puma (stuffed) to draw attention to the Telex terminals that the company makes for British Telecom. Chris Huxtable said that as yet they had not had any complaints from the Wildlife Liberation Front and that it had appeared before.

Fungus, the offshoot of mini-maker Systime, belied the complaint that there were no flamboyant stands. Their mushroom pillar and command post gave them a butterfly's view of the Grand Hall and one that was only equalled by the lounge-in-the-air of the Digital Equipment stand.

Neither company would comment on whether or not this was a conscious extension of the friendly rivalry of the two companies, and the term "coincidence" was bandied about with varying degrees of

sincerity.

At sister publication *Computer Talk's* stand a minor queue was forming to key into the talking computer and take a chance on the quiz programmed on the Apple by Lancashire-based Pete and Pam Computers.

Last year a similar machine guaranteed a small crush opposite the Gents' and just down from one of Olympia's many meeting places or bars.

Not content with the seven or eight watering holes in the Grand Hall, Lambart Computers set up their own pub on their stand, but we have so far been unable to reach it during opening hours.

A similar ploy was tried by Data Packaging. Unable to join the 350 plus exhibitors at Compec because of lack of space, the company decided to do the next best thing and took over the first floor of the nearest pub to Olympia, the Hand and Flower.

As this is the favourite haunt of those Compec visitors suffering

from exhibition lag, it is likely the company will get a fair number of visitors.

But the company is determined to make it into the shelter of Olympia next year.

The same applies to the Press. Five software companies who were slightly tardy in booking Compec this year have set up the road in the Royal Kensington Hotel and are equally determined to be first in the queue in 1983.

The exhibition this year has its own daily paper, a light-hearted but serious record of the events of the show and one which has become obligatory reading for exhibitors and visitors. I overheard one of the standard Compec questions - which ran something like "What do you do when you get the function set to zero?" being answered with a straightforward guess from an engineer hiding behind the daily.

In last week's Stand Guide and 4214/5215 was wrongly labelled it should be John McNulty Limited.

Next year - bigger again!

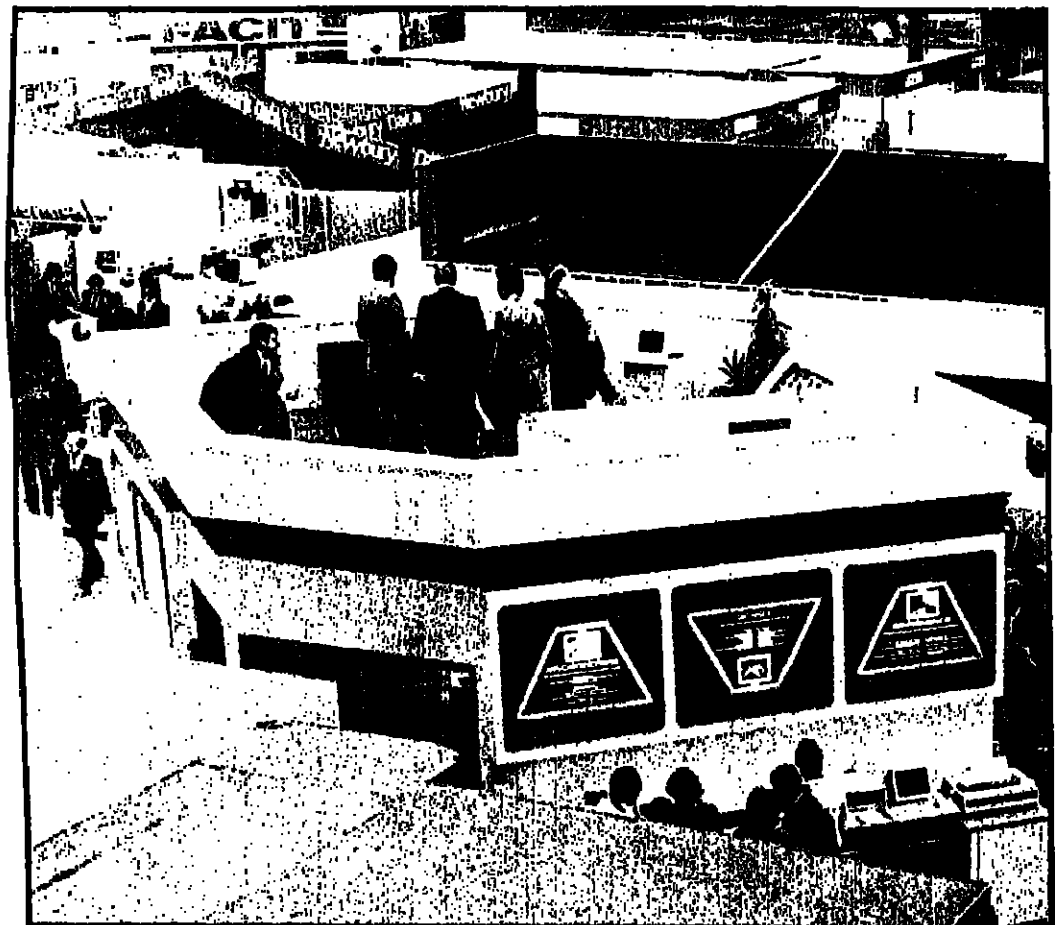
NEXT year Compec '83 will take over the whole of Olympia and software will be able to come from the cold.

For this year Software Village expanded so much, from just over 30 exhibitors last year to over 100 now, that it needed its own hall. This is the temporary Poly Hall, to the rear of Olympia's largest space, the Grand Hall.

The expansion into the Nats Hall, which is currently the place for India's industry and products, will give Compec '83 a further more space: 10,000 square metres compared with this year's 5,000. And it will give next year's Software Village exhibitors room of their own in the Grand Hall.

The industry's UK showplace has grown at the same speed as the industry itself. Compec started in the early 1970s with a small area in a London hotel. By 1976 the demand for space for exhibitors and for visitors to breathe meant that it took over the Wembley Conference Centre, and only two years later it was forced to move to Olympia and the attendance figures jumped to 29,000.

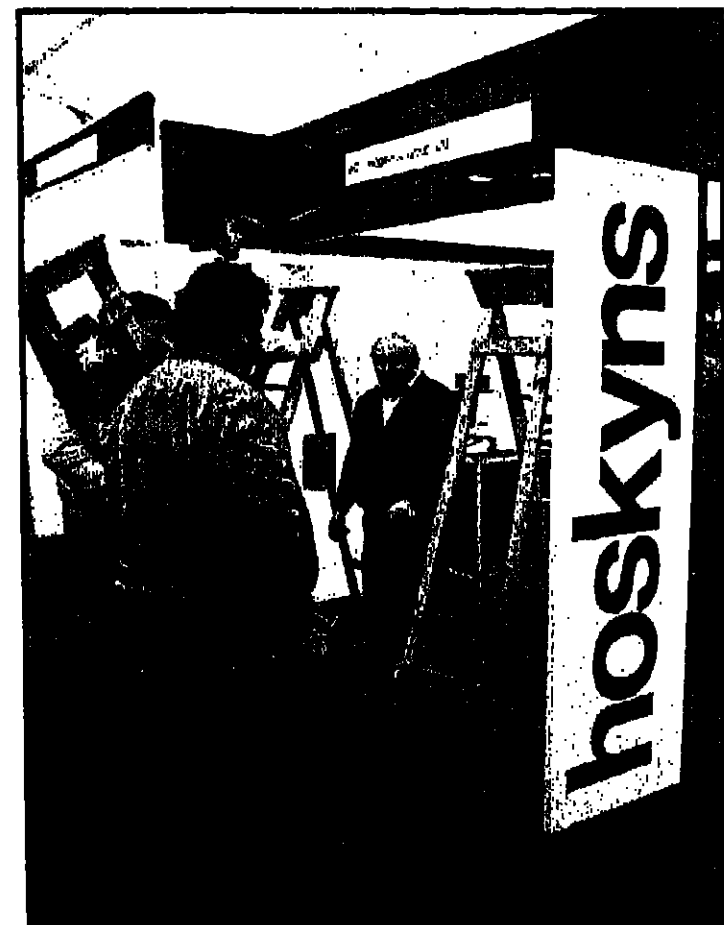
By 1982 attendance had bounced up to 32,000.



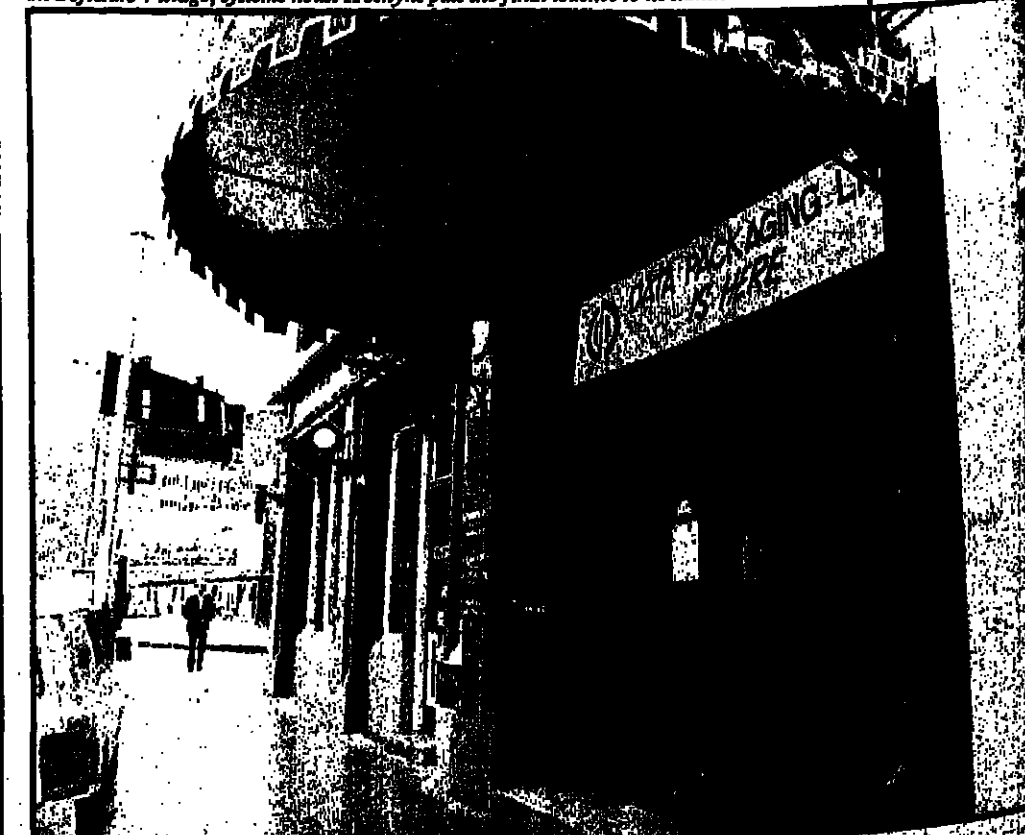
Digital Equipment's stand top lounge resembles a command post.



Lambart brought its own pub and menus.

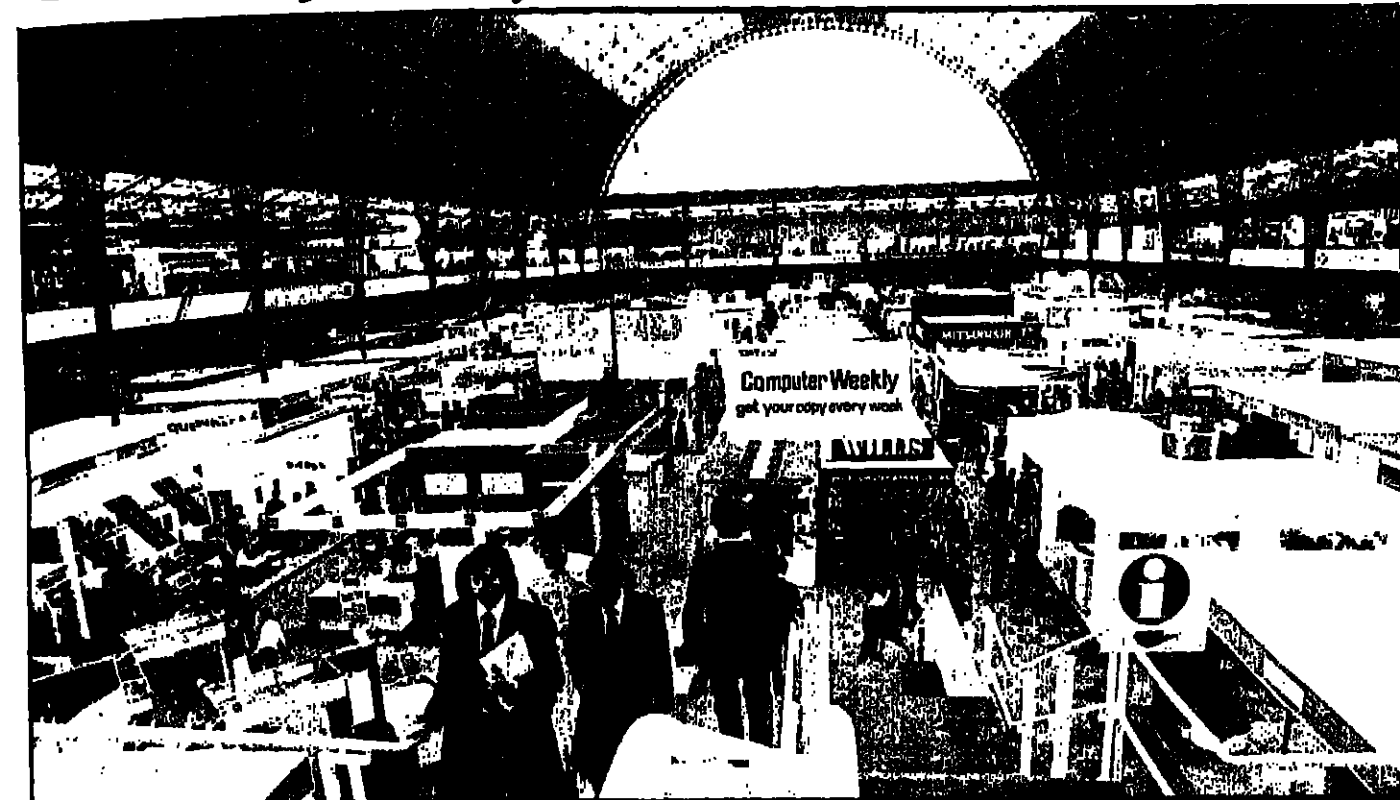


In Software Village, systems house Hoskyns puts the final touches to its stand.



Data Packaging found room at the inn, but will be at Compec next year.

Colour, flair, and careful planning



With over 350 exhibitors, Compec '82 is aiming to attract almost 40,000 computer professionals.



The first competitor in Computer Talk's quiz.

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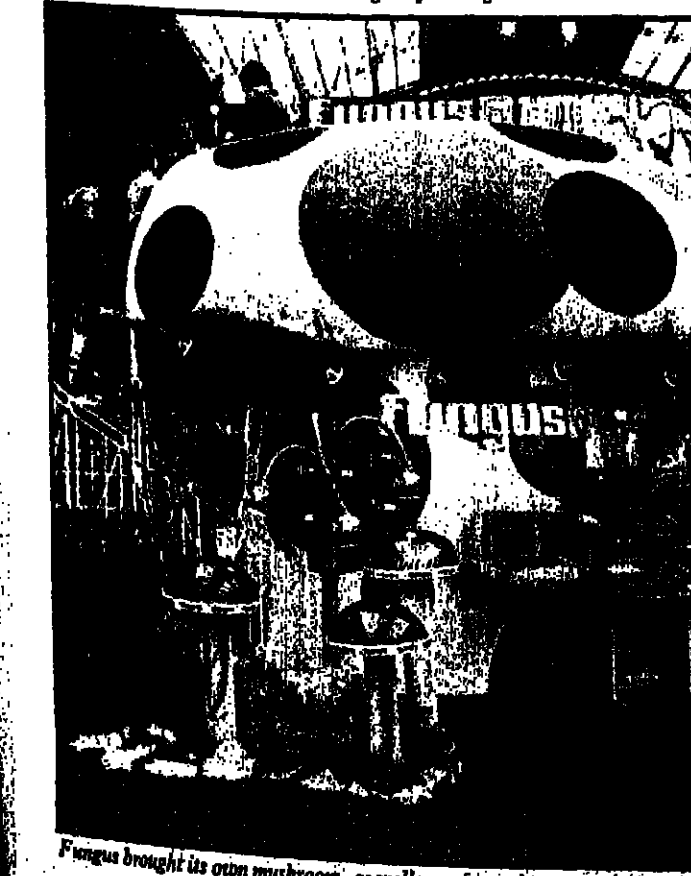
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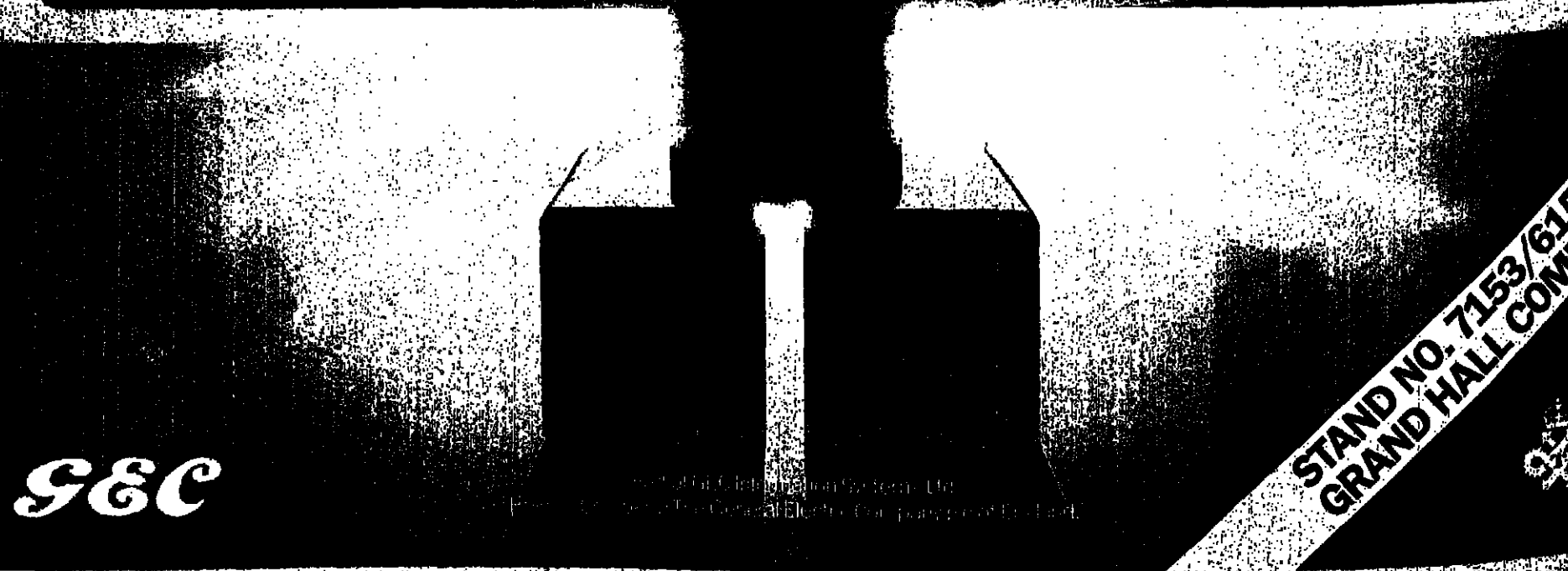
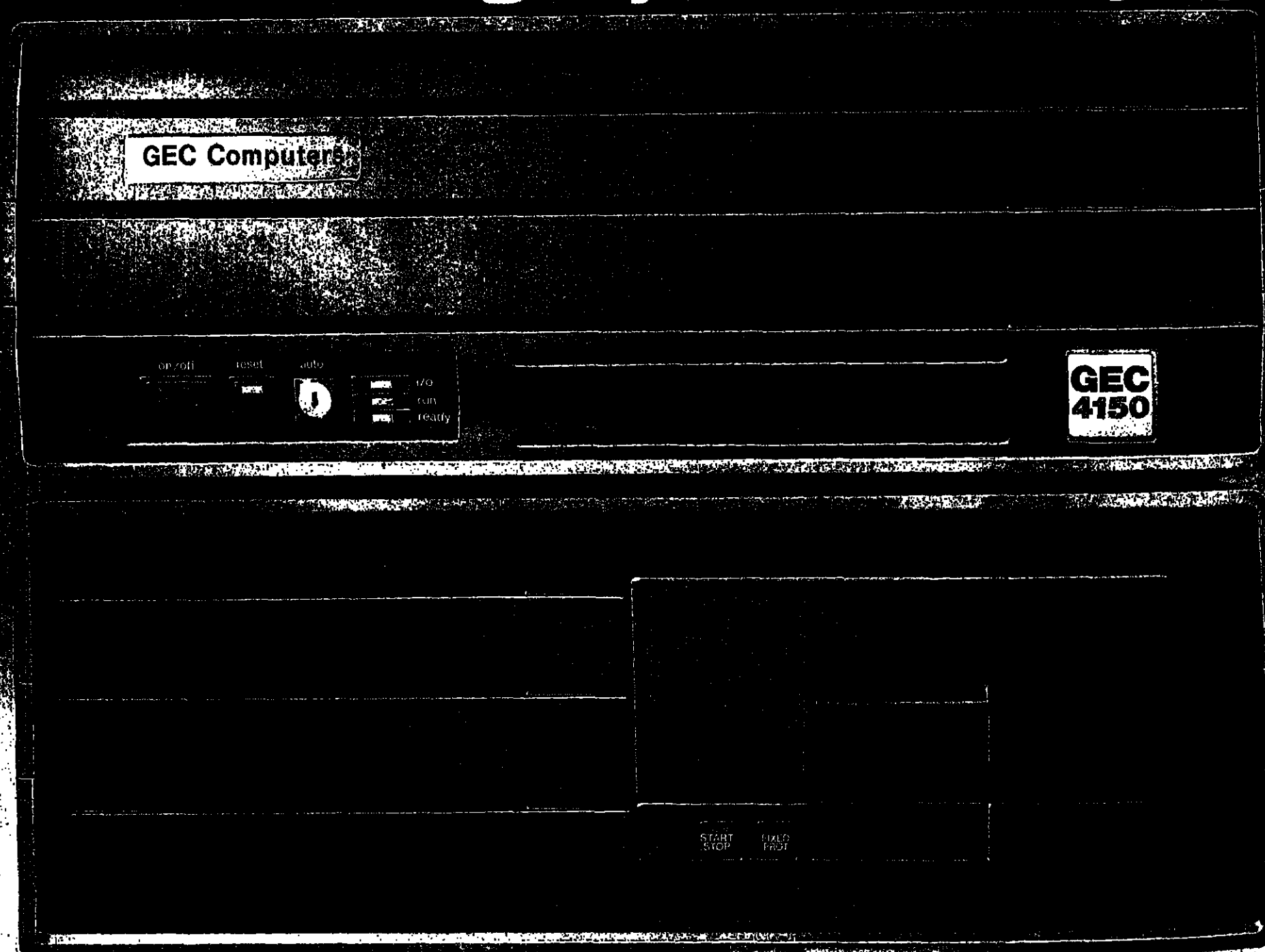
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MICRO NEWS



VASS... "We're not just another overnight Silicon Valley mushroom."

Vass set for Victory in business machines and industrial control

ROGER VASS, co-founder of one of the fastest growing microcomputer companies Altos, is out to do it again. His new start-up, Victory Computer Systems, is set to take on the business computing and industrial control markets with a range of 16-bit machines, targeted at "serious multi-users - the market segment a notch above personal computers, the \$10,000 to \$25,000 bracket."

And that is just for starters. "Victory will be into the fault tolerant multi-CPU business within a year," Vass adds.

Although machines will not be seen over here until early 1983 - and then only in prototype quantities - Europe figures large in Vass' plans for the company.

"Any company not taking a worldwide perspective is making a fatal mistake," he says. "We're not just another overnight Silicon Valley mushroom, over here as itinerant US vendors. We seek long-term relationships with distributors, and hope to manufacture in Europe."

The two versions of Victory's computer, the Spirit and Factor series, encompass both main trends in current 16-bit micro newcomers. The Spirit is based around the Intel 8086 family, using the 80186 chip which integrates many support circuits on to the processor chip, and runs CP/M-86. The Factor, basically the same machine with a different processor board, runs Unix on a Motorola 68000.

The surprise comes with the market sectors Victory is aiming to hit with the machines. "For general data processing, most people are satisfied with set application packages, a user-friendly operating system is not so essential," says

Vass. "But in industrial control, where things change quickly, the ease of programming is vital."

The Unix-based Factor is to be pushed squarely into this industrial control market, where it will give something that nothing else does, Vass reckons, and will be up against the mini makers like Honeywell and DEC. The fact that Unix is not a real time operating system is looked after by adding a very fast real time executive, VRTX.

The main push into the business computer market will be with the 80186 Spirit, but Vass will not be surprised if the Unix machines find their way to business users too. He reckons 60% of Victory's estimated first year production of 1,000 systems will be Unix machines, and that a good proportion of these will be for business use.

The architecture of the two machines brings together single-board and bus-based technology. The main board is truly a single-board computer, says Vass, and contains the 68000 or 80186 CPU along with 256K RAM, a Z80-based I/O controller and ports for up to eight users.

The disc controller board contains yet another processor - this time a 16-bit Zilog Z8002 - and a channel expander board, again Z80-based, also carries a slave Z80 for running eight-bit CP/M applications. An Ethernet controller due in March will also have its own 16-bit processor, so as not to burden the CPU. The boards are linked through the Motorola/Mosel/Philips VME bus.

Victory plans to move into full production in February or March. Machines will be at sites early in 1983, with volume shipments coming in the second quarter.

HP announces first fruits of link with Sony

THE microfloppy disc market is moving from talk to substance. Hewlett-Packard has brought out the first fruits of its multi-million dollar deal with Sony, the HP9121 which boxes the 3 1/2-inch drives into a standalone mass storage unit for the HP range of personal computers.

The unit is available as a single drive for £837, dual drive for £1,235 or single drive plus 4.6 Mbyte Winchester for £3,477. It combines the Sony drive mechanism with HP's electronics and packaging. Disc capacity is 270 Kbytes, the same as commonly used 3 1/2-inch discs, but on the 3 1/2-inch cassette-enclosed discs.

The Hewlett-Packard system

will be compatible with existing drives, and will be suited to HP's range of personal computers, as well as the new "small footprint" machines introduced with the microfloppy drive.

Meanwhile other computer manufacturers are starting to appear with products incorporating the Sony 3 1/2-inch drives. Japanese micro maker Sord has the drives integrated into the portable version of its M23 micro, and has been selling a standalone unit for a month now.

Another portable micro builder, US company Computer Devices, has also just shown its Dot machine, which incorporates two Sony microfloppy drives.

Intel promises 4 Mbit bubbles for early 1983

MAIN US bubble memory pioneer Intel has reaffirmed its leading position in this non-volatile memory sector. It has announced the promised fourfold increase in chip capacity. A four-megabit bubble memory device, complete with support circuits, will be sampled in the first half of next year.

"Intel is on schedule in its bubble memory development," says David Shrigley, product marketing manager for the non-volatile memory division. "We said we would announce the four-megabit bubble this year, and we have. We're in it to stay."

Sample kits will weigh in at \$1,780, but the volume price should drop rapidly, reaching about \$600 by 1984 when the price per megabit will be much the same for one-megabit or four-megabit devices. By 1986 Intel expects the four-megabit bubbles to be about \$150.

The new device is a double first,

according to Intel. It is the highest density solid state memory yet, Intel claims, with something like five megabits in all on a chip 14.6mm by 13.5mm. The extra bits come from the in-built redundancy that makes the device cost effective - and manufacturable, adds Shrigley.

The chips are slightly smaller than the present one-megabit bubble devices and more can be squeezed on to the three-inch garnet wafers. There are 16 of the new chips per wafer rather than the 12 of the earlier device.

The other first claimed by the company is that this is the first commercial application of X-ray lithography in chip manufacture. It has feature sizes down to 0.75 microns, compared to 1.2 microns on the one-megabit bubble and 1.5 microns on Intel's densest commercial MOS memory, the 27128, 128K EPROM.

"Garnet is the ideal material to experiment with X-rays," says

Shrigley. "They change the nature of silicon, but don't alter the garnet we use to build the bubble memories."

Perhaps the most important feature for those who are going to use the device in application products is the compatibility with the present one-megabit devices produced by Intel and to be second-sourced by Motorola under the agreement signed in June.

The four-megabit 7114 has the same architecture, is pin compatible with the 7110 one-megabit device, and uses the same command set and drivers. The support circuitry is pin compatible too; the controller is virtually the same chip. The four-megabit capability was designed into it when it was being developed for the 7110, says Shrigley, and it needed only minor ROM changes.

So the controller chip - which has been the main cause of the high drop-out rate in the bubble memory business - was the first

support chip to be available for the higher density device, rather than being late as it was for the one-megabit bubble. Problems in developing adequate controllers were thought to lie behind the spate of exits from bubbles by companies like Texas Instruments, Rockwell and National Semiconductor.

To upgrade from current bubble memory applications to the new four-megabit chips needs only minimal hardware and software design changes, claims Shrigley. The hardware changes are to do with the device packaging. The four-megabit bubble device will appear in the leaded package specified in the agreement with Motorola for the one megabit, which itself will move to this new, smaller package late next year. Minor software changes are needed to cope with addressing the greater device capacity.

Shrigley sees most potential for the denser bubble memories in computers and networks.

200 reasons to buy the BTI 8000



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INTERVIEW

IBM could be 'losing touch with user base'

John Grant, chairman of the IBM Computer Users' Association, talks of a growing communications gap between the corporation and its customers, in this interview with Kevan Pearson

IBM is in danger of losing touch with its expanding user base, according to John Grant, chairman of the IBM Computer Users' Association, and the financial director of Alexander Clark of Glasgow.

"There is a real danger that the communications gap between IBM and its customers is growing," says Grant. And he cites two examples of where a failure in communication from IBM has caused friction among some users: First, the recent announcement that it is dropping the 3081D, and replacing it with the model G, thus making the D an obsolete machine, and wiping several hundred thousand pounds off the value of recently installed machines.

Grant's other example was where IBM temporarily suspended Sale of Installed, under which users could buy installed rental kit from IBM at favourable rates. This occurred because IBM had used up all its tax allowances for the arrangement. But that did not emerge until later, after several CUA members had complained, says Grant.

IBM could have avoided any friction if it had taken the trouble to communicate, Grant contends.



GRANT... "I've never come across any user who would benefit from IBM being split into two."

One possible way out of this is for IBM to hold regular regional meetings with users. "It is no longer possible to keep in touch through local salesmen," says Grant, "because the market has changed. IBM has a much larger user base, especially at the small systems end."

An area where there has been a lot of communication recently has been IBM's latest price rise, announced in August. It was the second major rise in six months, and in line with IBM's recent prices policy of increases on a twice-a-year basis. But it reckoned without the wrath of the CUA, which wrote its dominant market position. The result has been a series of discussions which, although they are unlikely to persuade IBM to abandon the latest price rises, has at least shown IBM that its users are not the passive species they sometimes seem.

Grant hopes something positive will come of this, but privately he acknowledges that a massive change in IBM policy can not be effected overnight, and that IBM faces an image problem: it cannot

readily admit to bowing to user pressure.

"The perception in the marketplace is that IBM does not respond to customer needs or demands. My personal experience is that IBM does respond, but that it is not always willing to admit that it does," he says.

And despite the attention that the prices issue has caused, Grant says, "I would not like to be the chairman who took on IBM over prices. We have several items under active discussion in the CUA council at any one time. It just happens that the prices issue was the one we chose to make public."

IBM had to listen to the CUA over prices, though it was no doubt taken by surprise by the tone of Grant's letter accusing it of exploitation and abuse. "Two things strengthened our hand," explains Grant. "On one hand there was a 30% hike in IBM World Trade profits. Secondly, there were certain price cuts in the US."

Grant is not very critical of IBM in any area. "No company becomes as big as IBM without being good at what it does, but this doesn't mean to say that IBM is good at everything."

"One benefit of our recent disagreement on prices is that no one has said that IBM equipment is not worth the money. They were complaining about excessive price rises—14% on top of 12% in January. On the prices issue we are just trying to achieve our general aim—trying to get IBM to take more notice of the market than they appear to at times."

Certain IBM practices annoy the CUA, rather than causing real problems. "The secrecy—no market share information or customer list—can be an annoyance. Some countries have these pieces of information, but they are not available in the UK."

He is not so concerned about IBM's avowed unwillingness to tell people what it is planning. "I can understand why it does this, and in any case I have not come across many people who complain about it."

Grant's views on the various anti-trust or abuse of dominant market position cases which have come IBM's way are outspoken.

"I have never come across anyone who would have benefited by IBM being split into two companies instead of one. By splitting IBM like this you would just have two very large companies to deal with."

"The big danger is that you could end up with a system which would please the legislators but do nothing for the users. Anti-trust action has provided artificial protection for some companies. The only way to compete in this market is to offer products and services like IBM and no one else does that."

So just how do you deal with a big company which allegedly controls 70% of the mainframe computer market?

Grant naturally prefers user power. "There are two things users can do—speak with one voice through the CUA, or go elsewhere if they are really dissatisfied. Historically very few go this route."

One of the problems which con-

fronts the CUA from time to time is what to do about the users of independent equipment from the plug compatible manufacturers.

"The council is looking at the qualifications for membership again. At the moment you need an IBM CPU. But the PCMs pose an interesting problem. The hardware component of the DP budget is decreasing and software expenditure is increasing, so does it matter which CPU is used? And IBM is one of the largest software houses in the world."

Grant would also like to see closer links with international user groups, especially since IBM is a worldwide company and the UK rates only fourth in the IBM sales

league table.

However, the efforts of past CUA chairmen have met with indifference if not hostility in their attempts to forge closer links with the likes of Share and Guide, the major international groups for large users.

"The UK CUA was the first national computer user group of its kind, and has the largest penetration in the UK (980 members). Guide and Share do not have a high UK penetration. There is a rift between us and them and we would like to see it healed."

"We would like to establish a good relationship with Share and Guide because of our common interests."

GRANT... "IBM would avoid trouble if it would communicate."



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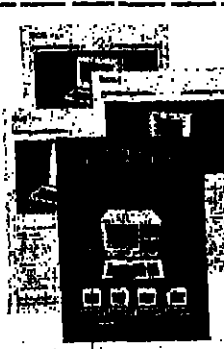
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PLATFORM

Murray Laver is a former board member for data processing at the Post Office.

New users should learn how to avoid complexity



THE trouble with experience is that no other teacher is anywhere near as good, but you cannot have it faster than real time.

You can, of course, learn from others, but the self-confidence needed to succeed in computing is not conducive to listening patiently to advice – or not until you have to rest to count your bruises. But for those willing to learn, experience is always cheaper to borrow than to buy.

Micros are bringing in many first-time users; fortunately it no longer matters much which machine they choose, nor is it too important what they use it to do – so long as it is not too important. Six months into their own experience and they will have clear ideas about hardware, software and their next supplier. Trying and almost succeeding teaches like nothing else, and I venture to guess some of the lessons they may learn.

They will certainly discover that persuading a computer to do useful work with the dirty data of the real world is a tricky business, and that it takes longer, costs more and achieves less than you hoped.

Some pundits will seem to believe that programming languages are the key, and new ones spring up like mushrooms in October. They are, in fact, irrelevant; the key tasks are for users to identify their needs, define the consequent problems, decide which a computer can help with (it won't be all), and to solve those within inevitable financial, operational and other constraints. Then the programmers can try to express the solutions precisely, completely and without ambiguity or excessive error; and which language they use will have little influence on their success.

I hope that new users quickly learn to avoid complexity, for experience teaches that programming costs and times increase much faster than in proportion to program size, due to the exploding multiplication of internal

relationships, and the rocketing costs of debugging. Even professional programmers differ by factors of ten, or more, when debugging; and I shudder to think what may happen when larger, and operationally important, business programs are written by amateurs to run on micros.

It is foolish to let micros be authorised at too low a level, as a minor expenditure, for they transform and integrate working methods and organisation when properly used, whereas their haphazard proliferation can degenerate into an expensive way for executives to do dispensable sums – the untrained in pursuit of the unnecessary.

The booming sales of micros are not in response to the needs of users; they reflect the need to dispose of all those chips. As a result we are all programmers now, and most likely many of us are remaking the errors of the pioneers, for instance: un disciplined input from inept keyboard operation with insufficient verification; inadequate operating instructions for running our programs; failure to declare our programs' expectations and limitations; skimpy testing; rigid program construction hampering adaptation; loss of portability by using local subsets of languages and so on.

The list could go on and on, but it is long enough to reveal the experience gap between amateurs and experts.

The problem is one of organisation and human relations. Hardware and software developments can do nothing to solve it, but computer people are enabled by technique and spend too much of their time polishing the tools of the trade: this is, of course, easy, profitable, pleasant to do, and free from human crudeness. But in the end it is the satisfaction of human needs that counts, and nothing else.

Murray Laver

PROFILE

From dish-washer to boss of \$100 million micro business

IT sounds too good to be true – Korean immigrant washing dishes becomes president of his own \$100 million-plus US-based company. But that is the route Philip Hwang has taken with terminal and microcomputer manufacturer TeleVideo Systems – and he still does not believe it.

"I started with \$9,000 savings and two partners in my garage in 1975. Now we employ 500 people and have over 100,000 square feet of factory. When I got to the first million dollars I thought 'Wow – I'm a million dollar company'. Now we've gone past \$100 million, which I don't quite believe."

But despite the rocketing growth, Hwang sees TeleVideo's course as a smooth progression. He started off importing video monitors from Korea – a business which sometimes involved flying to Seoul twice a week – moved to smart terminals, then microcomputers. Each move built on the products and experience gained in earlier stages.

"It is all logical," says Hwang. "I'd got the monitor – and I still use the same Korean supplier seven years later because he's the best – so I just had to add a keyboard and control board to get to a smart terminal. A microcomputer needs a processor, ROM and RAM, which are already in the smart terminal, so add storage like minifloppies and Winchester and it becomes a microcomputer."

Hwang surveyed the market for two years, trying to guess which way to jump. He lived with it all the time, he says. Then he came up with his answer.

"Microprocessor-based microcomputers were becoming very good, reasonable cost and very powerful products. But without CP/M they were nothing. And the problem with CP/M is that it's single user only, and now people were demanding more. MPM was a limited amateur product, not allowing you to share files, so it was not quite multi-user."

He sees multi-user operation as all about sharing, with joint access to files, integrated accounting software and the like. Any so-called multi-user system that slows noticeably for a third user and causes "impossibly long" ten-minute waits when there are four users



HWANG . . . "I'm still not a businessman."

was just not on, he reckoned.

So Hwang came up with his idea – a real multi-user system that was fast. To achieve this he fixed on his own operating system and machine architecture.

The architecture tackled the problem of speed by giving each station in the system its own microprocessor. "They only cost \$3.50 each, so why not?" asks

Hwang. A computer with larger amounts of storage allows central database management.

All this is controlled by Hwang's operating system MmmOST – the three "m"s standing for multi-user, multi-tasking and multi-processor. This sits on the central computer, while the stations run CP/M, giving the wide base of application software.

You can start with a single-user system and just plug more users into it. I thought then everyone would be happy, but no, they always want more.

"Microcomputers are not just toys, they have moved into business. People are not afraid any more. But you've got to come out with a growth path. With our computer you can start with a single user system and just plug more users into it. I thought then everyone would be happy, but no, they always want more."

So TeleVideo offered more with 16-bit stations to mix in with the eight-bit ones and graphics options. And in the new year, in a move away from the unified architecture, it will start to deliver a 68000 system running Unix for users wanting a high-power 16-bit ter.

Growth potential seems to have rubbed off on the company. From nothing to \$67 million in five years looks like a good enough record on the display terminal side, where TeleVideo is now the number one independent supplier, and second only to IBM overall. But it pales rather compared with the computer systems achievement of \$8 million revenue after one year. Hwang expects the company to make up 70% of TeleVideo's business next year, which looks set to scale new heights. Growth from the first quarter of 1981 to first quarter 1982 was 500%.

Hwang reckons the computer systems took off because of the timing, the architecture and the operating system – which cost five years of effort. The TeleVideo reputation, built up from its terminal side, helped too, and people bought on the name despite its reliability problems.

"It took about a year to clean up the hardware and software, but I feel good now," says Hwang. "Now I have confidence."

TeleVideo is still privately owned. Employees hold 98% of the company – though the bulk of this is Phil Hwang's, at something like 89%. It manufactures in California and Puerto Rico, and is looking towards Europe, particularly Ireland.

"I'm still not a businessman," claims Hwang. "I'm an engineer at heart. I never thought I would be a big money maker, and I still can't count the dollars. My business philosophy has been to survive, and never be obsolete. The pleasure is to get ideas over to products and have them accepted."

ComputerWeekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Thursday, November 18, 1982

Will IBM learn its lesson?

THE concession on pricing wrung from IBM by its user group contains important lessons for both computer manufacturers and users. And the main one of these, equally applicable to both sides, is that a close dialogue between manufacturers and users is essential.

It was extremely magnanimous of IBM UK's assistant general manager, Tony Cleaver, to acknowledge that the letter in which the price rise was announced was "inadequately worded" with "insufficient rationale for the increase". Magnanimous it may be, but it would be an empty gesture without any action on IBM's part.

The IBM Computer Users' Association demanded that IBM withdraw the increase announced in September to become effective in December. That IBM will not do – it couldn't, and still retain face in the market. And heads would roll, so no senior IBM employee is going to risk it.

IBM has intimated, however, that a review of its prices policy is in order, and indeed under way.

Cleaver said: "I do understand the problem frequent price increases can cause. Given the strength of the views you expressed I will undertake to ensure that full weight is given to your views in future price increases."

There can be only one real conclusion from that. IBM will not raise its prices on a six-monthly basis, abandoning the policy it has adopted for the last three years.

Of course, simultaneous with this tacit acceptance that the CUA has a very strong case, came a rather mealy-mouthed justification for the September price rise, which the CUA had called "exploitive".

Nonetheless, the CUA has won an important victory, and clearly demonstrated the power of concerted user action. Some will, unjustifiably perhaps, say that the CUA has not gone far enough, that having achieved this much it should now press for IBM to reduce or withdraw the September increase.

These views are likely to get short shrift from the present CUA leadership, and absolutely no consideration from IBM at all. The increase is in the past, and unpalatable as it may be, companies will have to pay it.

John Grant, the CUA's chairman, is not just a canny Scot, he is also the financial director of his company. He knows that to get this far is achievement enough, on this occasion. There will be other times for further action. He, and the CUA council, have shown their mettle. It is to be hoped that IBM also acknowledges the portentous nature of what has happened, and that it learns from it.

Sadly, IBM has shown in the past that it is not quick to learn this kind of lesson.

Just a giga-memory

UPON hearing that Bart Khan had vanished, and that Micro Xeno, the company set up to exploit his 10-gigabyte solid state memory device, was in liquidation, one industry source breathed a sigh of relief and said: "Now, maybe we can get on with exploring the possibilities of the charged packet memory without the handicap of Bart Khan around."

Because what Bart Khan brought to an obscure area of information technology was an insatiable hunger for cash and a glorious inability to produce anything concrete, even with the experts saying that there was logic in his proposition.

The liquidators reckon that there is less than £2,000 left in a company which received up to £500,000 and appears to have spent very little of it.

But much of that money will never be claimed, according to the liquidators. Khan obtained money from people, many of whom will not want to be named, now that he has vanished.

Which all goes to show that it is very difficult to decide just what to put your money in these days. Do you take a chance on the Khans of this world, with maybe a long-shot chance that if it comes off you will be into a project worth millions? Or do you play it by the book and your broker and play only the safe bet? If you play it safe, do we ever again have a Cray or an Amdahl, or a DEC?

1984 and all that . . .

THIS week's example of the strange things people say about computers was sent in by T. J. Williams of Loughborough, Leicestershire, who wins £5.

The human brain can be compared to a highly sophisticated computer.

Eustace Chesson: Who Do You Think You Are?

LETTERS

Minis at Lloyd's are Data General

YOUR feature on City software (CW, November 4) was misleading in implying that penetration in the minicomputer market has been confined to DEC, Perkin-Elmer and Nixdorf. To my knowledge, for instance, the only systems currently installed and working on the floor at Lloyd's are based on Data General hardware.

They were both developed by Mike Ling of Ling Business Systems who has been intimately involved with operations at Lloyd's for more than five years and is, indeed, an associate member. Ling utilised this experience to design a real time system that automates the slip transactions on the basis of a syndicate's unique set of management statistics.

The systems have resolved the perennial conflict between the extremely limited space on the boxes and the need for exceptional data processing power. Slips may remain valid and operational for 50 years and more, and these vast quantities of data need computer power far beyond the reach of microcomputers.

The latest installation of a dual Eclipse MV/6000 32-bit minicomputer system fulfils this requirement and is the basis of a system that Ling Business Systems designed, wrote and implemented in the remarkably brief space of time between April and October of this year. In achieving this, Ling drew on the experience gained from a previous syndicate installation to

gether with systems in the Lloyd's-related areas of reinsurance and the companies market.

It is worth noting that, in addition to this important first, Data General has made considerable inroads elsewhere in the City, particularly in the area of banking and insurance. Foreign exchange, money broking, credit card and travellers cheques administration, Eurobond dealing and broking computer services are typical applications operated by major international and UK banks and Stock Exchange members on Data General Eclipse computers.

W. CADOGAN
Systems engineering manager
Data General Ltd
Hounslow, Middx.

Intelligence not sapped

I WAS horrified to find someone had responded to my letter in the way that Robert Noble did (CW, October 28). I really had no idea that anyone could feel as strongly as he obviously does about a calculator being used to check an assertion regarding the fifth power of numbers.

The effectiveness of any appliance (including the human brain) depends, of course, upon the intelligence with which it is used, though I don't honestly believe that the sort of thing Noble seems to be complaining of is as widespread or typical as he fears.

Although his letter did make a rather alarming connection between my factious account of the consequences of what I thought was an isolated and trifling bit of

mental laziness, and the major issue of intelligent people allowing their imaginative and analytical powers to be sapped, I am sure his plea for solutions to problems, and not just answers, can serve as a useful reminder to us all – probably almost as important an issue as the crooked thinking, typified by the kind of extrapolation from the particular to the general, which Noble's letter portrayed so well.

Unfortunately, there was more irony in the second paragraph of his letter than he could have realised, because I shall actually be leaving the world of data processing shortly, and not of my own free will either!

MARTIN FLETCHER
Min of Ag, Fish & Food,
London EC4.

Privacy Bill – wait and see

A CORRECTION, if you will allow me, to your report on the Hewitt/BCS meeting.

I certainly did attack the NCCL approach to the data protection problem, as being both tactically and strategically unsound. But I did not suggest, as you put it, that they should co-operate with the BCS "to get the existing Bill through and then produce amendments later."

Speaking as an individual BCS member I will have to wait to see whether the draft Bill produced by the government corrects some fundamental faults in the White Paper. If it does then I would want

to work with anyone to have amendments made to it.

If that fails, or if the Bill is so built as to resist amending to make it sensible, then I would be trying to get the whole computer community to oppose it on second or third reading and thereafter.

But I hope for better things and I am quite sure that the NCCL is strategically wrong to try to incorporate protection on all systems; and tactically wrong to try to do it by means of a parallel Bill, private or amending.

GERRY FISHER
London W13.

Help needed on survey

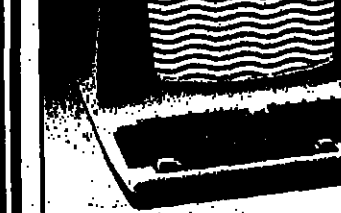
I AM just starting on a survey of Forth books and implementations for Riomhinn, the newsletter of the Computer Education Society of Ireland. This has a circulation of 700-1,000, mostly among secondary teachers. Most Irish secondary schools with computers have Apples, with Acorn systems becoming increasingly popular, but there are many other systems in schools here as well.

I would be grateful for any help that your readers could give, whether by way of documentation, book lists, or even actual books or software for review. I have already had helpful responses from Artic, Orchard, and Knights, among others; but I would be glad to hear from anyone else.

HUGH DOBBS
Information Officer, CESI
Newtown School,
Waterford, Eire.

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Soundex meeting

YOU published a letter of mine (CW, September 23) in which I mentioned the phonetic search technique we are using for the Metropolitan Police gazetteer. I have subsequently had a number of letters from people interested in soundex methods of data access.

I should like to suggest, if I may, through your columns, a one-day meeting of anyone interested in soundex techniques where we could exchange experiences and ideas. We may even end up with an article for CW!

I will arrange and co-ordinate such a meeting. Perhaps any interested people would write to me enclosing an s.a.e.

P. R. HARRISON
Harrison & Crisp
Stonehouse, Glas GL10 2ES.

Other Ansi standards

IT is not true that Cobol and Fortran are the only languages to have an Ansi standard and that Ada will thus be the third, (CW, October 28). There are six standards for minimal Basic (ANS x3.60-1978) and for PL/I (ANS x3.53-1976).

There can be significant differences between draft standards and actual standards (cf. Fortran 77) so that distributing software complying only to the draft is of uncertain value.

DAVID T. MUXWORTHY
University of Edinburgh.

Employers – a poor show

THE article by David Blechner Stop Fighting Each Other for Staff – Train Your Own has prompted me to reply, as it highlights my position as a 19-year-old HNC student trying to start a career in the industry.

As a habitual reader of your appointments pages, I have noted that the number of opportunities for trainee programmers with any reputable software house or mainframe company is nil.

A valid point made is: why aren't any computing apprenticeships of any kind available? From what I have seen the training opportunities for programmers are pathetic. It's a pretty poor show, everyone expecting everyone else to train the staff.

Could someone please enlighten me, how do you get that initial step up the ladder?

SIMON MEEHAN
Camberley, Surrey.

P. F. WAREHAM
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DOWNTIME

Answer to prayers

YOU only have to think of a potential application for a microprocessor these days, look around hard enough, and you'll probably find it done. It came as little surprise therefore to discover that someone had built a Mecca-finder to tell peripatetic Muslims in which direction to pray.

The Mecca-finder looks like a pocket watch and is based on a compass and a microprocessor. To pray with it you look up a map reference of the nearest big city,

adjust a small arm on the dial accordingly, and then a little miniature painted on the dial points to Mecca.

All that remains is to get down on the floor and pray with your head pointing in the direction indicated.

The Mecca-finder costs about £2, and was selling like hotcakes in the Middle East.

So far Saudi Arabian Airlines has ordered a million to give away to passengers.

Russians are welcome to these secrets

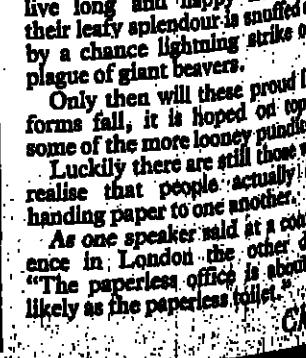
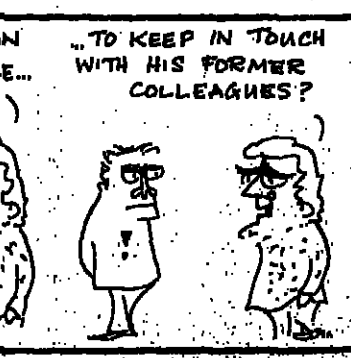
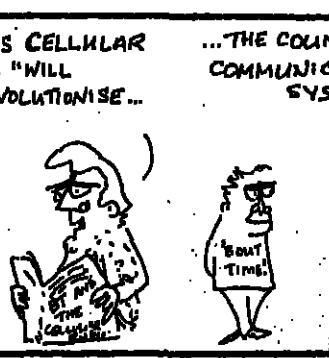
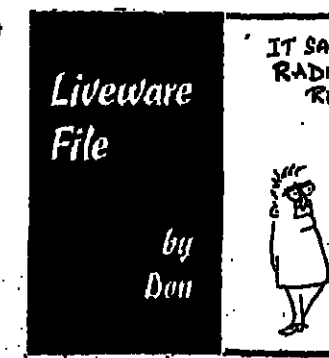
SHOCK horror revelations from the CIA last week revealed that the Russians are stealing British

atomic secrets stored in a Cray 1 supercomputer at Reading University. The Red Peril is obviously far

more advanced in computer technology than we had thought – Reading doesn't have a Cray.

10 YEARS AGO

FROM COMPUTER WEEKLY OF NOVEMBER 16, 1972: Proof that the expected recovery in the UK computer industry was materialising, was contained in the latest Department of Trade and Industry figures, showing a big improvement in hardware deliveries, and orders at a record level . . . Texas Instruments announced that it would start production of the Silent 700 terminal range.



Election model

I KNEW things were going badly for the SDP, but I was shocked by the revelation that Britain's foremost mouldbreakers are declining rather more rapidly than the viewing figures for Channel 4.

A few weeks ago, David Owen was asking any SDPite with access to an IBM mainframe with more than two megabytes of mainstore to get in touch with him for the purpose of building a model of the SDP's electoral prospects.

But the great search is off. Owen has now realised that the IBM would be "too big and too expensive for the job", and is looking for a minicomputer instead.

Surely all that is needed is a toy word processor with a two-word vocabulary: "No" and "Chance".

Music to their ears . . .

"IBM is walking on eggs when it comes to automated office systems", says *Ordinatus*. A few weeks ago the French weekly computer newspaper published musings by Pierre Barazer, director-general of IBM France, on this subject.

In discussing the ideal automated office system he observes, "It should have multiple functions . . . should be powerful . . . reliable . . ."

Paper still has its uses

AMID THE EUPHORIA OF IT82 (what do you mean, what euphoria?) it is easy to carried away on a wave of electronic enthusiasm. Pundits preach of the all-electronic office which will be

commonplace in the business world of tomorrow, where paper will be a thing of the past.

Large numbers of people will be spared the sawmill, and will be able to live long and happy lives until their last splinter is snuffed out by a chance lightning strike or a plague of giant beetles.

Only then will these proud forms fall, it is hoped on top of some of the more looney pundits. Luckily there are still those who realise that people actually like handling paper to one another.

As one speaker said at a conference in London the other day, "The paperless office is about as likely as the paperless toilet."

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Whether you integrate our hardware into your systems, or develop software for specific applications, your special expertise creates entirely new markets.

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With our modular approach to hardware technology, you can buy boards, boxes, or complete systems, and concentrate on building the products your customers are looking for without taking on any new problems of your own.

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You're probably familiar with the kind of performance and reliability we deliver. But we think you'll be just as pleased to see the level of support we give you.

Since we're interested in solid, long-term relationships, we're ready to put all the strength of our support organisation behind you and your customers. So you can offer site planning and installation; contractual maintenance; per-incident and self-support services.

You'll have the resources of our 170 offices in 39 countries behind your product, on any basis you like. From comprehensive, 24-hour, on-site maintenance to economical 'return-to-us' service.

We do a lot to protect your software investment, too, by making our new products compatible with our earlier models. For example, programs developed more than eight years ago for our first HP 3000 still run on our latest generation of the same computer. So you can upgrade to a much higher-performance system at practically no software expense.

In short, we do all these things with one simple goal in mind: to help you make a profit. Because if you're not successful, we're not successful. It's as simple as that.

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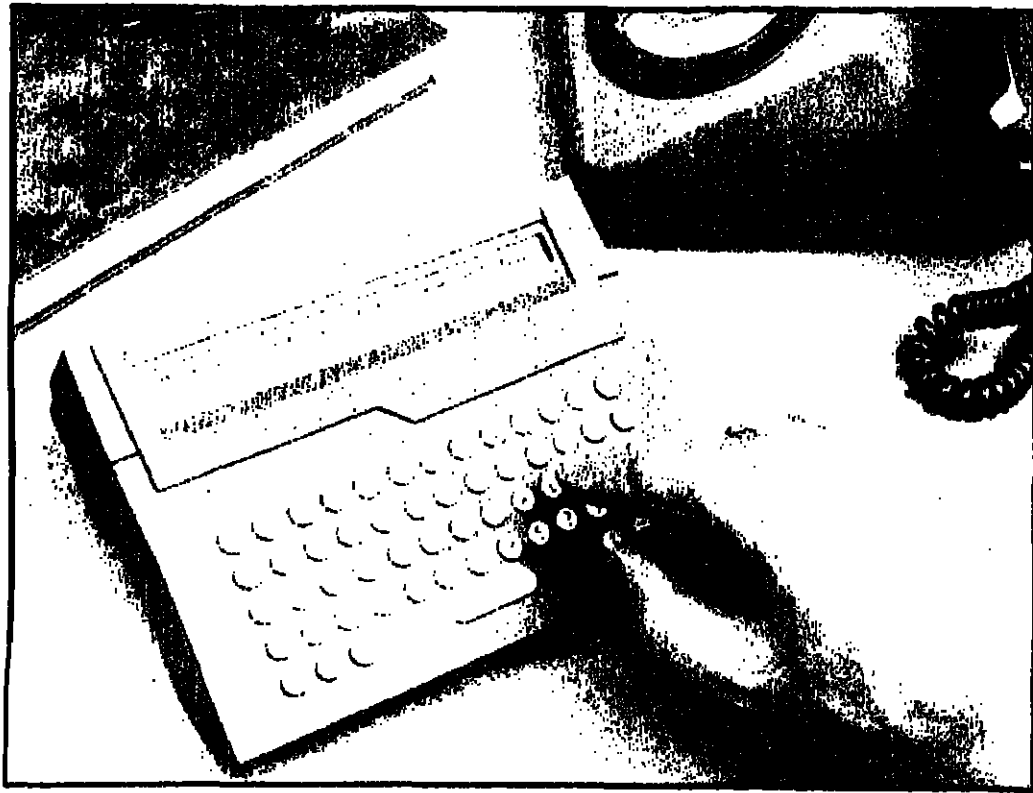
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PRODUCTS



The Microscribe terminal from Terminal Technology.

'Smallest terminal on the market' claim

TERMINAL Technology, has launched what it believes to be the lowest cost and smallest general purpose terminal on the market. Developed for the company by QED Product Design Consultants, and manufactured in the UK, the Microscribe terminal is designed primarily as a desk-top information retrieval tool.

It can be used with any host computer, peripheral or network utilising the industry standard RS 232C serial interface at speeds up to 9600 baud whilst supporting XON-XOFF protocol.

Weighing 500gms and measuring 190 x 140 x 26mm, the Microscribe has an ergonomically designed full qwerty keyboard with a single line alphanumeric LCD display of 16, 32 or 40 characters.

The 8.7mm high characters are formed from a 5 x 11 dot matrix to give upper and lower case with true descenders. Special graphics with an underline cursor are standard features. The basic onboard storage capability of 160 characters can be expanded to 32,000 by internal RAM. A memory protect feature keeps all data stored in RAM intact for 1,000 hours even when the rechargeable batteries are fully discharged. A cassette port allows for the transfer of unlimited amounts of data to and from ordinary cassettes or dictation minicassettes.

The terminal is microprocessor based, with a software routine that enables a dual operating mode to be selected via the keyboard. These modes are application

oriented and enable the terminal to be used in either "engineering" or "executive" type environments. The engineering mode allows the user to capture and view all 128 ASCII characters, including control codes.

Both NMOS and true CMOS versions are available to offer the user low cost or portability, with a battery operated version giving typically three to four weeks use between charges.

The software controlled keyboard uses conductive elastomeric technology and features full travel switches with excellent tactile response and selectable audio feedback.

Terminal Technology (CW), Clarence House, Clarence Place, Newport, Gwent NP7 7AA. Telephone (0633) 214128/9.

Streaming tape controller

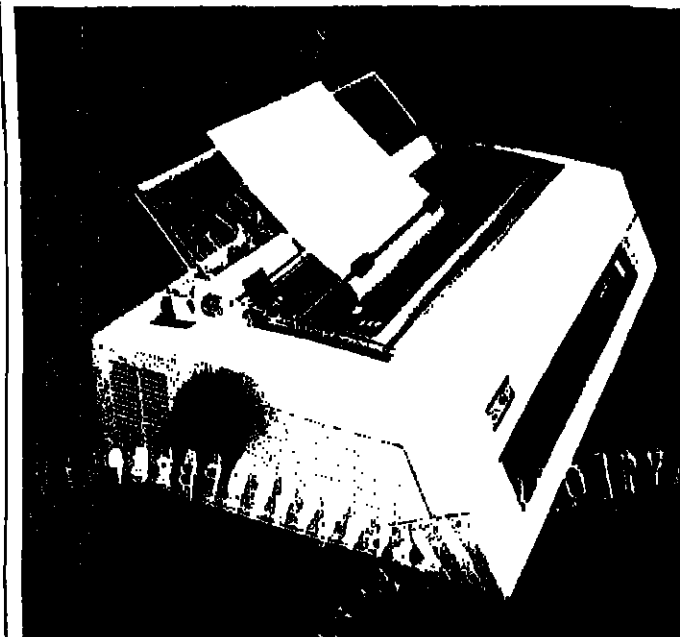
GENERAL Robotics Corporation has introduced a new streaming tape controller that interfaces the Archive and Cipher 4-inch streaming tape drives to the DEC LSI-11 QBus. The new product, the STV11, allows users to back up their hard disc systems in a fast, efficient manner, says the Corporation.

The STV11 is packaged as a dual height LSI-11 QBus module and emulates the DEC TM11 for full software compatibility with all DEC operating systems. A single 50-conductor ribbon cable connects the controller to up to two Archive or Cipher streaming tape drives with two or four recording tracks. The device address and interrupt vector are switch selectable for ease of integration and for selecting a non-standard address and vector.

From 10 to 45 Mbytes of data can be stored on a single 450ft tape cartridge depending on the tape drive model used.

Data may be recorded at rates up to 87,200 bytes per second on 90 ips drives. These rates allow one Mbyte to be recorded in less than 12 seconds. The controller incorporates CRC error checking and results in less than one non-recoverable error in every 10 billion bits, it is claimed.

Pricing begins at \$1,500 with quantity pricing down to \$945. General Robotics Corporation (CW), 57 North Main Street, Hartford, WI 53027, 414-673-6800.



The Daisywriter 2000 printer from CPU Peripherals.

Solving the 'trade-off'

LATEST enhancements to the Daisywriter have been made to create a daisywheel printer which solves the "trade-off" problems facing computer users. The decision whether to put up with type-writer-type printers with short life spans or computer-quality units at too-high prices no longer applies, claims CPU Peripherals.

The new Daisywriter 200 continues the features of the original 2000 model introduced a few months ago - 16K or 48K buffer with 99% full warning; auto or manual selectable baud rates from 50 to 19,200; selectable page

length settings; variable pitch and proportional spacing; 20 cps bidirectional printing; linear drive motor, dust-free enclosed daisywheels and 3-chip processor control for reliability.

The new features include a universal interface. By changing only the low cost connector cable, this allows the printer to plug into any computer and operate on any software designed for any other daisywheel printer.

CPU Peripherals (CW), Rodd Industrial Estate, Govett Avenue, Shepperton, Middlesex TW17 8AQ. Tel: (98) 46433.

Upto 4.8bn bytes of online disc storage

THE new Model 650 controller from Xylogics International offers up to 4.8 billion bytes of disc storage directly bootable from any DEC VAX 11/730, 11/750 or 11/780 computer system.

The Xylogics controller runs on all DEC Unibus machines including the DEC VAX 11/780, 11/750 and 11/730 emulating RM02/3 and RK06/7 disc systems. The basic 650 controller links up to four drives with SMD interfaces, providing a total of 2.4 billion bytes. By adding the exclusive Xylogics I/O Expander Card, this capacity can be doubled to a total of 4.8 billion bytes.

The Xylogics 650 utilises a 16-bit bipolar bit splice microprocessor to provide operating and diagnostic commands. All current DEC VAX software can be used.

An important feature of the Xylogics 650 controller is an Autoformatter which gives users the ability to format discs without CPU intervention. Xylogics has built on-board ECC error detection and correction systems into the 650 to save valuable central processor time otherwise used to carry out error detection and correction.

The 650 consists of a single multi-layer hex width board capable of supporting up to four 675 Mbyte drives, and a quad width expansion board that will support up to four additional drives if required.

Xylogics International (CW), 46-48 High Street, Slough, Berks SL1 1BN. Tel: (0753) 78921.

MDS adds to range

MOHAWK Data Sciences has announced the addition of the Model 2141-3 printer to its line of peripheral hardware supporting the Series 21 distributed data processing systems.

The Model 2141-3 is a high-quality, 96-character, serial RS 232C-compatible station printer which operates at a maximum speed of 40 characters per second.

The Series 21 will support one 2141-3 printer per attached operator station. This currently allows up to eight 2141-3 printers per system. Both single and dual channel printer controllers will be available.

The Model 2141-3 will be offered with either fiction or pin-feed platen, and users will have a choice of unidirectional forms tractor, cut sheet, feeder and a mechanical front feeder, covering a wide range of forms handling capabilities.

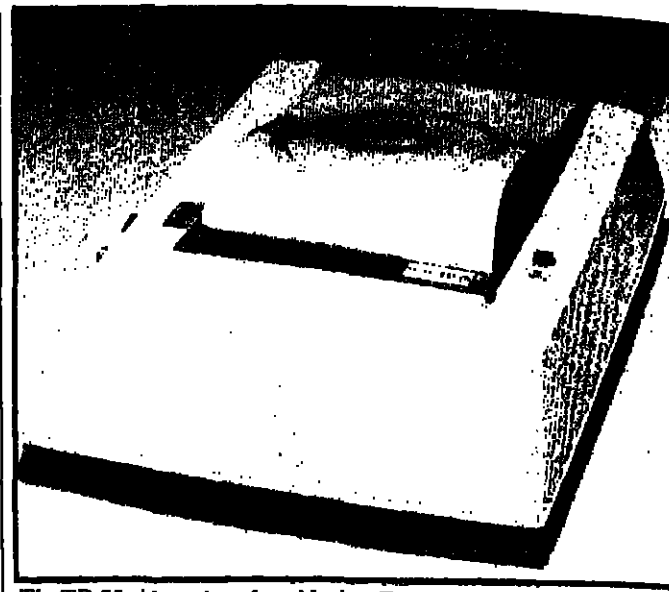
Mohawk Data Sciences (CW), Seven Century Drive, Parsippany, New Jersey. Tel: (201) 540-9080; ext 294.

'Unmatched speed' claim

A LOW-COST Microprim printer offering print and graphic quality approaching daisywheel standards is now available from Teleprinter Equipment. Using the established Prim 9 wire printhead, the new unit will offer unmatched speed and performance for cost in the personal computer market, says the supplier.

In print mode the Microprim's throughput is 75 characters per second (correspondence-quality) or 110 characters per second (data). Quality reproduction in graphic mode is ensured by high-density - 84 by 84 dots per inch - printing.

Teleprinter Equipment (CW), Akeman Street, Tring, Herts HP23 6AJ. Tel: (0442 82) 4011/5551.



The TP-75 video printer from Nuclear Enterprises.

Fast printing direct from VDU screens

FAST, high resolution reproduction of an image on any type of CRT display is claimed possible with two new electro-sensitive printers from Nuclear Enterprises, of Beenhaim, Berkshire.

The first range is the TP-75, a high resolution-only machine capable of printing up to 1280 dots (horizontal) x 1500 dots (vertical) per display on A4 paper - in 23.5 seconds. Both the TP-75 and the smaller, lower-priced TP-55 are said to offer improved reliability over earlier models. Nuclear Enterprises, which is marketing the printers in the UK on behalf of the Toyo Corporation, forecasts greater demand for high quality video printers, because of their ease of use and fast, high quality reproduction.

The TP-75 measures 116mm x 365mm x 480mm, weighs 10kg, and can be connected to all kinds of CRT display via a single coaxial cable, without a special interface.

The TP-75 utilises two methods of scanning: interlaced and non-interlaced.

Both the TP-75 and TP-55 are claimed to be quiet in operation. All data on a VDU screen can be

copied without modification, and both units can be easily connected to all kinds of CRT display for terminal and microcomputer use. High speed printing and high reliability are assured through the use of high speed scanning mechanisms. Both models can be remotely controlled.

The TP-55 provides positive and negative prints from black and white or colour displays, and copying can begin the moment the power is turned on, unlike other printing methods, including dot matrix, which require a "warm up" period before operation. Measuring 260mm x 370mm x 160mm and weighing just 4.8kg, this model utilises the 2:1 interface and progressive scanning method. High resolution is possible with 1280 x 1000 dots per display. Paper size is 127mm wide on a 40 metre roll.

The printers can be employed in a wide range of applications in industrial and scientific fields, and in the normal data processing markets.

Nuclear Enterprises (CW), Sighthill, Edinburgh, EH11 4BY. Tel: 031-443 4066.

Dual purpose printer from Wilkes

A VERSATILE printer, the Anex WP-6000, from Wilkes Computing is claimed to be suitable for both word processing and high speed draft and data processing applications. It also provides high resolution, dot addressable graphics.

Other Anex products now being introduced by Wilkes include the high throughput DP-2620A line printer and low noise DP-9500A series line printers.

The WP-6000 has an 18-wire printhead and meets hard copy requirements with four combinations of print speed and quality: true correspondence (150-180 cps), draft (280-330 cps), enhanced data processing (200-330 cps) and standard data processing (300 cps).

Correspondence quality printing is available at either 10 or 12 cps, or with proportional spacing.

There are three resident fonts while additional character sets can be added or down-loaded from the host system. Subscripts, superscripts, double width and simultaneous underlining are all provided as well as italics. Pitch and character style changes can be made within the same line.

Full text formatting facilities are available, including justification, single/double columns, horizontal and vertical tabs and variable line spacing. To ensure compatibility with existing software packages, a Diablo emulation mode is selectable.

Wilkes Computing (CW), Bush House, 72 Prince Street, Bristol BS1. Tel: (0272) 25921.

Property management system

A COMPREHENSIVE property management system launched by Geest Computer Services is based on Texas Instruments minicomputers.

The system, which has been designed to be used by property managers rather than computer specialists, covers most management, financial and reporting functions.

The system creates and amends files containing details of properties and leases and produces reports based on that information, either on a fixed cycle or at the user's request.

The online reporting facilities enable a user to obtain reports on items such as company or site details, individual properties, and individual leases. The monthly management reports include reports on rent reviews, vacant premises, options, amended property and lease details.

The rent demands section of the system calculates the rent and other fixed charges due from a tenant under the terms of a lease. It also creates and posts the financial transactions to the ledgers and produces the rent demand based on current calculations and unpaid amounts from previous demands.

The system has a flexible enquiry facility, enabling the user to obtain details of policies by insurance type, within a collection policy number, or which are due for renewal.

Geest Computer Services (CW), Vicarage Farm, Peterborough. Tel: (0733) 51331.

COMPUTERS AND RADIATION

AS the Cold War begins to heat up, manufacturers of computerised electronic equipment are becoming increasingly worried about the vulnerability of their components to nuclear radiation.

The major semiconductor manufacturers are all interested in research on "radiation hardening" - some more than others. But chips which are truly radiation-hard are still some way off - and seem to be getting further away, because the higher the circuit density, the more sensitive the circuit.

This is best illustrated by tests carried out at the Ministry of Defence's Atomic Weapons Research Establishment on various semiconductor devices which showed bipolar devices to be more robust to the effects of various levels of gamma radiation and neutron doses than the more modern metal-oxide-silicon (MOS) circuitry.

The British-made Ferranti F100-L bipolar 16-bit microprocessor was also found to be the most resilient to radiation effects out of the other bipolar microprocessors tested.

But if weapons are to become more complex, the component count must be reduced, giving rise to the need for large-scale integration, and bipolar technology cannot keep up in the LSI race.

Where complexity is not needed or space is not at a premium, the other alternative is to replace sensitive semiconductor components with old-fashioned electromechanical components.

Dr Graeme Wilkinson explains the background to this issue.

Is your micro memory nuclear hardened?

THERE has been much public debate in recent months over the issues behind Britain's nuclear weapons policies and the value of our current defence plans. Justifiably perhaps, such issues do not usually find their way into the columns of computer journals.

There is, however, one particularly subtle and, as far as computers are concerned, catastrophic effect of nuclear explosions. This is the phenomenon known as the nuclear electromagnetic pulse (EMP), an effect which has such a long range that a mainframe based on London could be permanently damaged by a nuclear explosion over West Germany.

During the first microsecond of a nuclear explosion, intense gamma radiation emitted by the nuclear fission and fusion reactions can knock the electrons out of the atoms in air molecules thereby creating a massive burst of electrical energy.

Although the amount of energy which is radiated in this form is negligible compared with the other forms of energy release (such as heat and blast) the EMP is extremely short-lived (about a hundred-millionth of a second) and can give rise to a peak power of up to 10 Megawatts per square yard at the Earth's surface - about 7,000 times the power of incoming solar energy.

Such a violent burst of radio energy can readily induce excessive voltages and currents in electrical conductors and hence cause permanent damage to many forms of electronic equipment. Electrical equipment can be damaged in one of two ways by EMP. Firstly, strong currents can be directly induced in conductive field strengths; secondly, excessive current pulses can be fed into them by external conductors such as power and communication lines or else from antennas which act as ideal pick-ups.

Unfortunately for the computer world, modern integrated circuits are among the most vulnerable electronic components when it comes to EMP. Even chips of less than 1 cm in size are able to pick up sufficiently large voltages to cause them permanent damage.

Microprocessor memories are therefore highly vulnerable. Damage to RAM may not be the end of a system, but damage to either ROM containing essential operating instructions or to the CPU will render a computer totally inoperable, requiring hardware replacement.

A single nuclear explosion detonated high over central England could bring down the entire national grid, destroy our telecommunications systems, many domestic radio and TV sets, and the majority of the nation's computers. Such an explosion would do little collateral damage to buildings or to humans if detonated high enough, except for the effects of any radioactive bomb fragments which find their way back to the ground.

Protection against EMP, a procedure known as hardening, can be achieved in one of several ways. For example, sensitive semiconductor microelectronics can be replaced by old-fashioned valves (which can resist current

surges about a million times greater).

Also conducting cables can be replaced by non-conducting optical fibre links. Equipment can, in addition, be screened either by surrounding it with a conducting box (a Faraday Cage) or by installing it underground.

Current surge arrestors can be fitted on transmission lines although they must be specially designed for the purpose; standard lightning surge arrestors are simply not able to react fast enough to stop the effects of EMP.

Test equipment has now been designed for simulating EMP and for examining its effect on components. For example the Petal and Petat simulators at AWE Aldermaston are used to test anything from a small box to a vehicle loaded with communication equipment.

Since the cessation of atmospheric weapon tests, simulators have provided the only means of carrying out EMP experiments. It is not good enough when evaluating equipment to test only individual components. The entire apparatus must be tested because of possible interaction effects and coupling, and because of this each circuit will behave intrinsically differently from any other.

Initially equipment is tested by passing high-level currents into it. Components which have ceased to function can then be isolated and individually tested and, if necessary, replaced.

When the equipment can successfully survive an excessive current injection it must then be subjected to a high level electric field to test its susceptibility to pick-up. Such a test is essential before equipment can be designated EMP-safe.

In practice, high-level electric fields can be generated by long wire radiators consisting of dipoles with a spark gap to which is applied a high voltage. When the gap reaches breakdown voltage it begins to conduct and a rapidly rising electromagnetic field is created.

Such tests have shown that equipment can be reliably EMP-hardened with techniques such as those described above, and that provided EMP survival is considered at the design stage, equipment can be manufactured with full protection for little extra cost, perhaps 5% extra (although it is clear that replacement or hardening of existing equipment would be a very costly procedure).

Most civilian computer equipment in this country has no protection whatsoever against EMP, although it is clear that in military circles the possible threat is being taken somewhat more seriously. During the first week of October the Greater London Council opened its nuclear bunkers for wartime controllers to the general public.

Visitors to these bunkers may have been surprised at the apparently antiquated state of the communications equipment inside them: teleprinters, old-fashioned relays, etc - there wasn't a single microchip in sight. The reason for this is almost certainly EMP survival and is not simply one of economy.

A Russian Foxbat fighter plane was recently "turned over" to the Americans in South Korea when its pilot defected. After close

inspection by experts it was discovered that its avionics components were primarily miniaturised radio valves - again, EMP resistant.

In Norway, the newest and most important telecommunication centres are now being built underground for EMP protection. The Swiss, too, have installed their most vital computers 600 metres under the Alps. But in the UK, the threat is not perceived as being of sufficient importance to merit the hardening of standard commercial computer equipment, and perhaps

justifiably. In recent years we have come to rely heavily on computers to control transport systems, communications, and all major financial transactions.

A society dependent on the microchip is an extremely vulnerable one. What is perhaps more worrying is that until all military communication links and computers are effectively protected, the use of high altitude nuclear bursts generating EMP over a wide area could cause many vital command



Comms desk at a nuclear bunker in Cheam. Old equipment is tougher.

and control mechanisms to fail at a crucial moment in a crisis. This in itself could lead to a tragic and uncontrolled escalation of nuclear conflict, and is one reason why many defence experts, including the late Lord Mountbatten, do not accept the concept of "the limited nuclear exchange" as a realistic scenario for any future European war.

Dr Graeme Wilkinson is co-author of *London After the Bomb* (Oxford University Press, 1982).

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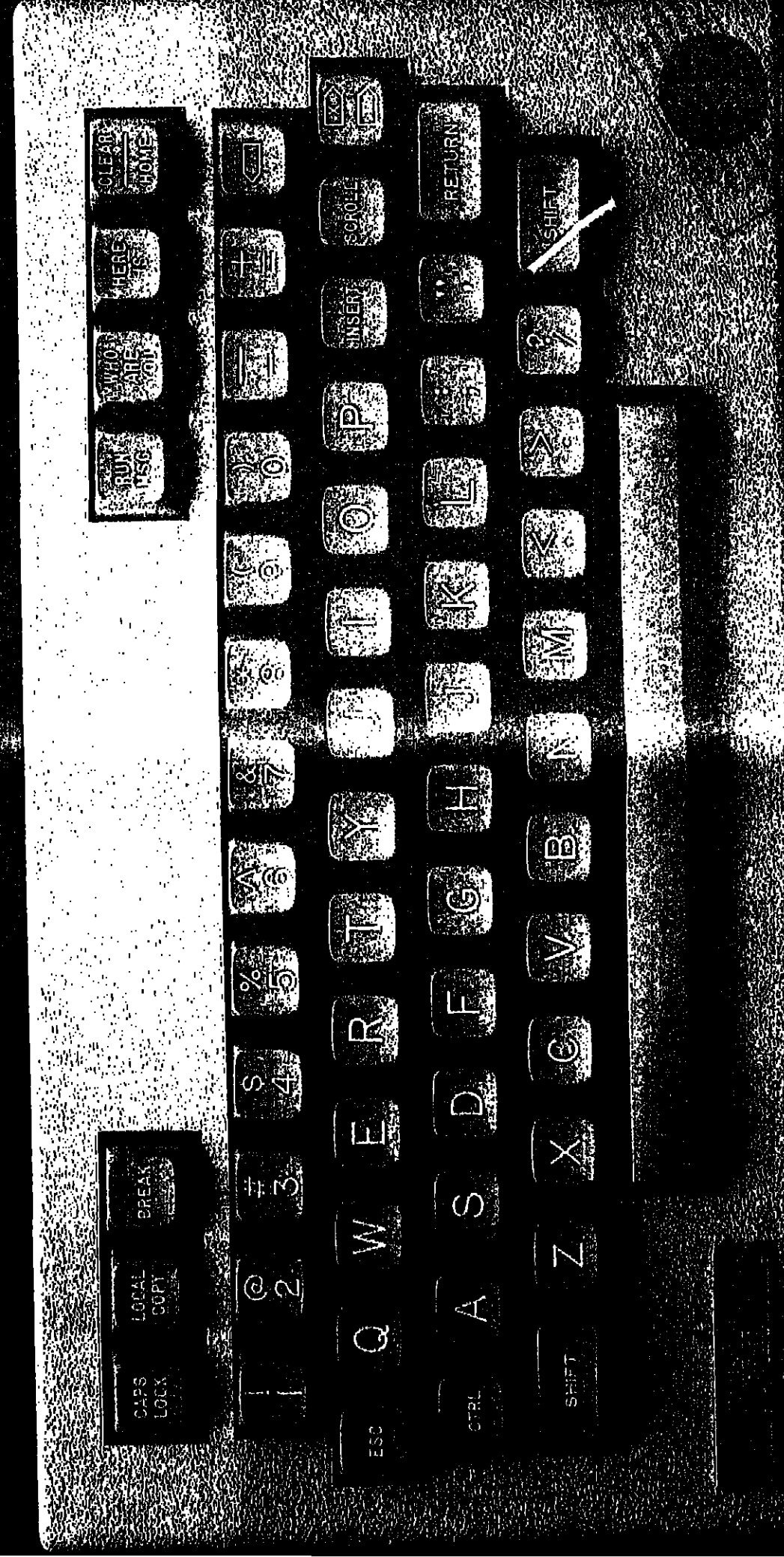
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Logica is well known as one of Europe's most successful systems companies. Our work in the design and development of advanced systems for clients in defence, space, public services, industry and finance has made us leaders in the field.

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To meet the continued expansion of our business we are recruiting people with up to 3 years experience in software communications or electronics. Applicants should have a good degree in mathematics, science or electronics. Applications from recent graduates will be considered.

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Logica offers you a challenging and rewarding career. We provide the opportunity to develop your skills on advanced projects, working in an enthusiastic and professional atmosphere.

To find out more call Julia Santen on 01-636 5454 or write to her requesting an application form ref. TG/2 at Logica Limited, 64 Newman Street, London W1A 4SE.

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Central London

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We need experienced staff to work on a wide range of development projects within our Group Management Services Department based near Oxford Circus.

The projects involve the development and implementation of computer-based systems across the whole sphere of activities in which London Transport is involved, ranging from the day-to-day operation and maintenance of buses and trains to the various support functions which are essential in providing an intensive transport service.

You will have the opportunity to work on extensive real time and on-line systems, involving distributed processing, database development, computer phototypesetting and computer-aided design, and to utilise our range of modern computers, which include IBM 3033, 3031, 4300s and 8100s, and ICL 2960 and 1904S.

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Bahrain is rapidly growing as a major commercial centre in the Middle East. It is a small island with strong links with the U.K. Whilst enjoying high tax-free incomes, expatriates have a life-style free from the restrictions found in other areas in the Middle East.

Our client is a major oil company with an advanced computer installation based on twin IBM mainframes and numerous mini-computers.

An experienced Analyst is required with a technical or engineering background to join a small team of specialists engaged on developing and supporting Planning and Engineering applications.

Candidates must have gained experience on developing systems on IBM hardware and, preferably, have a FORTRAN background. In addition, experience of leading a team of Analyst/Programmers would be an advantage.

This area is of growing importance to the company and as such offers excellent career progression.

Social conditions are excellent and include

- Free furnished bungalow accommodation
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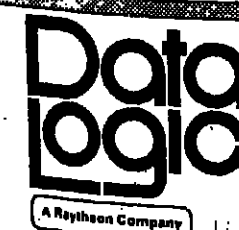
This advertisement is directed towards experienced systems sales professionals who seek selling responsibility for major vertical markets. Data Logic, one of the UK's leading systems houses, is augmenting its software systems sales by recruiting key executives, who will concentrate on selling managed and turnkey projects to the government, food/drink distribution, insurance and banking sectors.

This recruitment heralds an important new business drive and we are looking for men or women with proven records in sales plus the enthusiasm to lead from the front. Technical support at Data Logic is excellent, freeing our sales people to concentrate on the task in hand: developing and converting high-value systems contracts with significant computer users and prospects.

We would like to meet you if you have at least 5 years' experience selling in one or more of these sectors for a major manufacturer or software/systems house (mainframe and substantial mini applications preferred), and are attracted by on-target earnings of up to £25,000 plus car, BUPA and other benefits. Assistance with relocation to the west of London area may be available.

To find out more, ring David Robinson on 01-578 9111

(or, outside office hours, our recorded answering service on 01-575 6195). Alternatively, write enclosing full c.v. to Data Logic Limited, 320 Ruislip Road East, Greenford, Middlesex.



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(1508)

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SYSTEMS ANALYST

to join a small team developing applications on their IBM System 3. Applicants should have a general commercial background and at least four years' experience in data processing. Experience on a mini computer and using RPGII would be an advantage. Occasional programming work may be required.

The position offers a salary of up to c. £11,000 and five weeks' annual holiday.

Please write enclosing a c.v. to The Data Processing Manager, Martin-Baker (Engineering) Ltd., Higher Denham, Middlesex. UB8 5A.

(1405)

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Salary £7404-£8076 plus 14% Shift Allowance

We are looking for a Computer Operator to complete our Operations Team in Catford, South London.

A two-shift, five-days-a-week, system is in operation using IBM 4341 hardware running under VM with DOB/VSE and CICS.

If you have at least two years' operation experience including all the above software we would like to hear from you.

In return, we are able to offer the above salary scale, 5 1/2 weeks' annual holiday, plus the usual Local Government conditions of service.

For information discussion contact Dudley Bason on 01-690 4343, Ext. 250.

Application form, returnable by 3rd December, 1982 and detailed job description from Chief Personnel Officer, Town Hall, Catford, London SE8 4RU or telephone 01-690 7855 (24-hour Answerphone service) quoting reference CE 296 and job title.



Our jobs are open equally to all race and both sexes

(1405)

DALROTH

Our client, a Saudi Arab subsidiary of a major US Corporation, have recently been awarded an exciting new contract in the Eastern Province of Saudi Arabia which entails the setting up from scratch of a new D.P. Department. They have installed an HP 3000 Model 64 and require the following people, all of whom should have HP 3000 experience, ideally gained on Model 64.

SYSTEMS MANAGER/DPPL

Tax Free £17.5-24K + car

With 10 years' DP experience, five years of which should have been gained in a large HP installation with interactive, local and remote terminals. Familiarity with MPE and IMAGE would be useful.

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Five years' experience including MPE, IMAGE and COBOL gained in either Financial, Inventory or Personnel application areas.

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Tax Free £14-18K

Extensive experience of COBOL in the same application areas as above; for one position FORTRAN would be required.

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Tax Free £13-21K

Four years' experience as DBA or equivalent using IMAGE, including design and data dictionary integration.

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Tax Free £13-21K

To plan and support a network of 30 local and remote terminals. You will need good experience of HP 2822A and LYNX terminals, line protocols, modems, etc.

All the above positions are available on two-year renewable single status contracts and include free accommodation, free food, excellent medical care, regular paid UK holidays with free first class air fares. In total this company offer a compensation package which is unrivalled elsewhere in the Middle East.

For further details phone Collin Maslen on 01-493 2947 days or 0480-214893 after 7.30 pm quoting ref: 9942.

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(1714)

Ref: 150

European Development Manager

IBM System 34/38 Environment

Starting salary around

£14,000 p.a. plus car and other benefits

Our client is Granada Group Services, whose headquarters are in Bedford. From there systems are developed to run on locally operated System 34s in Sweden, Denmark, France, Switzerland and Italy. There is also some involvement within the German company. We are looking for someone who has in-depth knowledge of the IBM System 34 range. Experience of System 38 would be a very great asset. The successful applicant will be a good manager, who is confident of his technical skills — someone who will generate confidence with users in the European countries mentioned.

The European Development Manager will be expected to travel fairly regularly throughout Europe, at the same time ensuring that systems developed in Bedford are properly controlled. The ideal candidate will have sound experience in the financial and commercial systems areas.

This is an excellent opportunity offering a very real challenge in an exciting development area.

Please send curriculum vitae to John Goldsmith



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(1702)

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We have been retained by the Datapoint Corporation of Australia to fill a key position in their rapidly-growing organisation. The post is that of

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The Sales Director is responsible to the Managing Director for five sales regions within Australia; for setting quotas for bookings, revenue and profits; and for directing the overall marketing strategy. He will also have a personal involvement in major bids.

The successful applicant will have an extensive hardware sales background, preferably encompassing both mainframes and mini computers, and involving networking/telecomms. Experience of sales management is highly desirable.

This is a rare opportunity to join — at top level — a well-established and successful manufacturer in the growing Australian market.

The earnings package, which is equivalent to £50,000 on quota, reflects the importance of this key position. If you are confident of your ability successfully to fill this demanding role, then contact Grahame Brownlie at:-



STRAND COMPUTER RECRUITMENT LIMITED

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TELEPHONE: GUILDFORD (0463) 34444/5

(1690)



Aluminium Bahrain (ALBA) is the major aluminium producer in the Arabian Gulf. Established in 1969, the company now employs some 2000 local and expatriate staff. Current major expansion creates a rewarding opportunity for a:

Senior Programmer COBOL

Benefits in excess of £17,500 net of tax* BAHRAIN

to make a significant contribution within a 3 year contract to the company's established central computer department. Set up in 1974, and now employing upwards of 30 staff, the department is involved in the development of on-line systems on an IBM 4331.

Candidates should have a minimum of 3 years' COBOL experience; VSAM or CICS knowledge would be an advantage. Program development will be on-line using I.C.C.F.

Salary, at present totally tax-free and freely transferable, will be negotiable in a five-figure range.

In addition, substantial married status benefits include: • 32 working days' annual leave plus 12 days of public holidays • rent-free furnished air-conditioned accommodation • full recruitment and repatriation expenses • annual return air fares for employee and family • assisted education for children • free medical care and life assurance.

*Benefits calculated at current exchange rates.

Bahrain is a stable country with a liberal government. English is widely spoken and the company is experienced in the rapid and smooth entry of expatriate staff into the local community. Extensive sports and social facilities exist.

Please write with full details to: K.W. Rowe,
Alba Smelter Services Limited, Standbrook House,
2-5 Old Bond Street, London W1X 3TB.

CTL Going Far

To you it is a question, for CTL it is a statement of fact. Already Britain's fastest growing mini-computer manufacturer, in one year alone our profits and turnover have increased greatly, thus enhancing our reputation of being a 'top performer' in the computer industry.

Of course, our impressive growth has been achieved largely thanks to our products, most notably the highly advanced 8000 mini-computer series, with the Momentum resilient non-stop processing system, both conceived, planned and developed to precisely meet the demands of a highly competitive market place. Combine these with our revolutionary new 32-bit mini, currently in its final stages of development and you'll begin to see that CTL has found the formula for success, and why we have such confidence for the future.

Confidence based not only on the technological excellence of our products but also on the exceptional calibre of our personnel.

CTL is on its way to the top, and we need your experience and professionalism to help take us there.

Systems Consultants

basic £11-13K + bonus + Car

This is a unique challenge, and one which will broaden your already substantial systems support experience to the full. Acting in a consultative role, you will identify user requirements and provide full technical support, both pre and post sale, to the Public Sector sales team. Using your knowledge of mini and mainframe computers, you will also establish profitable new business opportunities and ensure optimum CTL exposure within the marketplace.

Quality Engineer

c.£9K

Qualified to HNC in Electrical Engineering, with related experience in computers and associated equipment, you will monitor product quality and reliability, carry out reactive field analysis, and participate in product introduction programmes.

Resident Engineer - Central London

c.£12K package including shift allowance + car

You'll be involved in ensuring preventative and corrective maintenance of CTL systems on site, planning systems installation, and resolving electro-mechanical/electrical product faults. If you've 3/5 years related experience in mini/mainframe systems and HNC in electronic or electrical engineering, we'd like to hear from you.

Computer Sales Executive - Birmingham

c.£24K package + car

With comprehensive regional and software house support behind you, your solid background of sales success and the superb 8000 series to boot, this is a first-rate opportunity to tap and develop a high growth potential territory.

Medical Sales Executive - S. England

c.£20K package + car

As a fully fledged, successful salesperson with a proven track record selling mini-computers preferably in the medical or related fields, you will be responsible for leading all sales activities to identify prospects and maintain profitable business links with customers. A high visibility role this one, calling for excellent organisational techniques.

Languages Group Leader

c.£15K

A high visibility project management role, you will be involved in converting system requirements into a practical language strategy, directing software development on one of the few original 32-bit mini projects in the UK. You'll therefore need to be a Graduate Computer Scientist with 4 years experience in a manufacturing, systems house or end-user environment and experience of man management and compiler development.

Senior Programmer

c.£12K

Qualified to Degree level with design experience in communications, you will aid in the definition, implementation and support of CTL's current and future communications systems. Besides having a thorough knowledge of Assembler, you'll need to know more than a thing or two about LANs, X 25 or SNA.

Senior Technical Author

c.£10K

Responsible for the preparation of technical documentation for CTL's software and hardware products, you will need a good solid background in electronics and 2/3 years experience of software documentation.

Marketing Product Manager

Momentum Software

c.£13K + car

A unique opportunity to develop your marketing skills, interfacing directly with the product development teams, the company's senior management and, of course, the sales team. Thus you will be expected to significantly increase the company's product strategies in addition to packaging, promoting and communicating the product to the outside world. This position relates to CTL's software for transaction processing, database and office automation. Experience in these areas coupled with high levels of creativity, communication skills and personal motivation are required.

Marketing Communications Manager

c.£16K + car + bonus

You have considerable experience of Promotional/PR activities in the computer systems or services market. Preferably, you have knowledge of mini-computers & applications software, in addition to good communication, high leadership qualities and organisational skills... then, we need you to take charge of presenting CTL's corporate capabilities to the marketplace.

Contracts Assistant

c.£8½K

If you've experience in handling Sales, Licence or Service Contracts, (preferably in the computer field) then we'd like to hear from you. You'll be involved in the presentation of complex sales contracts for our high cost capital products therefore you'll also need a knowledge of the legal aspects of contractual agreements.

Obviously, there is far more to the story than this, so to find out more about just how far CTL is going and how you will fit in phone David Drake on (0442) 3222, alternatively write enclosing full personal and career details to: Personnel Department, Computer Technology Ltd, Eaton Road, Hemel Hempstead, Herts.

All positions are based in Hemel Hempstead unless otherwise stated.



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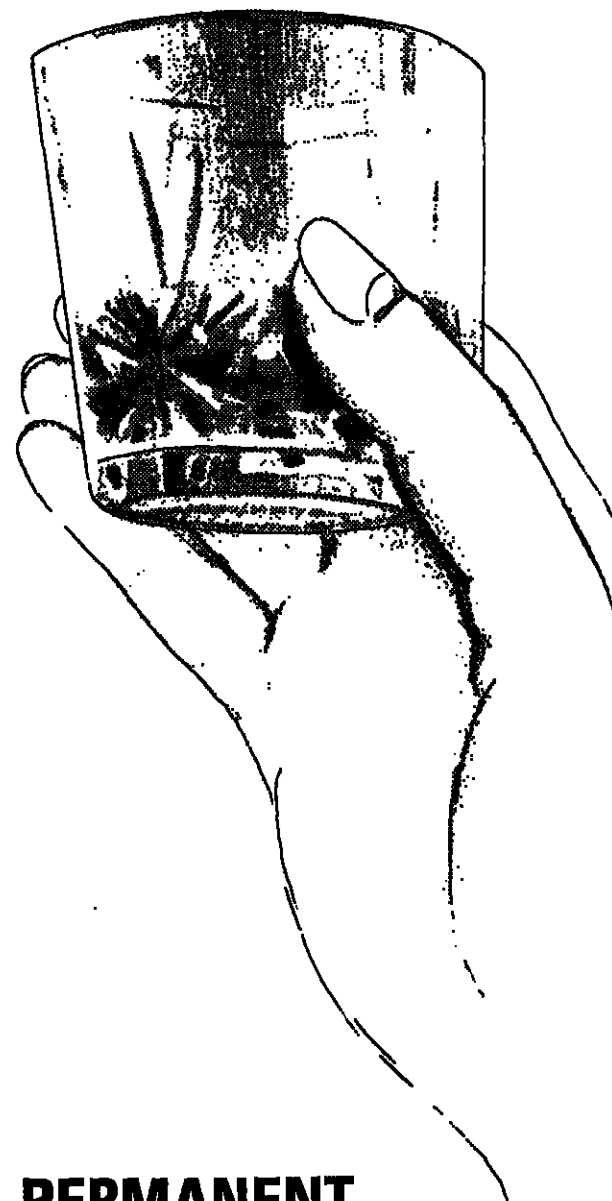
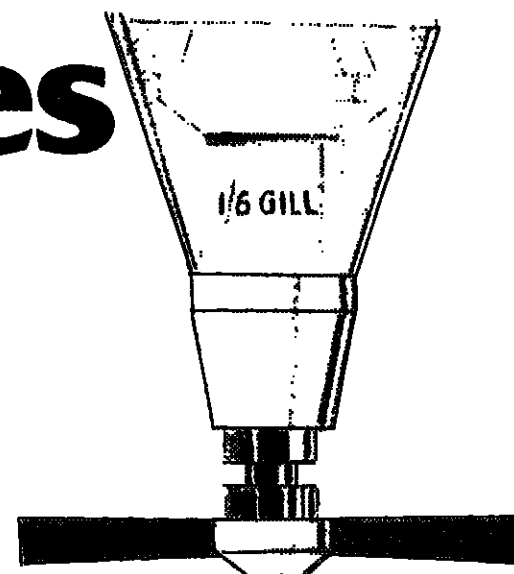
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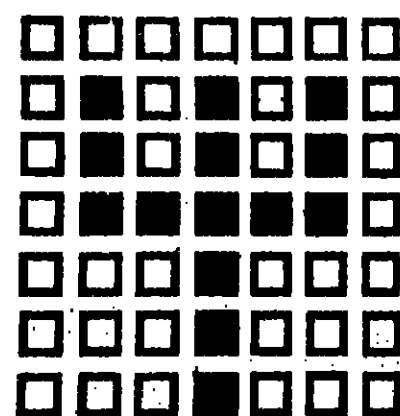
For further information contact Peter Lamb.

DATABASE Administrator with DATA MANAGER
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Principal Software Engineer c.£12,000 pa + car

You would undertake technical leadership for the direction and specification of software, within the development sphere. Software development may be either internally or customer generated and your role will certainly involve liaison with corporate engineering, marketing and hardware functions. Your track record of at least eight years must include proven innovative skills, problem-solving ability and experience of top level presentations. You are probably in your early thirties and seeking a challenging career development opportunity.

Senior Software Engineer — Development c.£11,000 pa

Your role is total project implementation and leadership. You will design and develop software from functional or customer specifications, using a high degree of innovation and an awareness of a competitive marketplace. Ideally, you will have at least six years' experience within a software engineering function and possess good task-management skills.

Senior Software Engineer — Support c.£11,000 pa

You will provide back-up software support at pre-sales and warranty stages, including the up-grading of products to new DEC releases and supplying a technical consultancy service during product support planning. Good interpersonal skills are vital as your role involves customer interfacing. With a minimum of six years software engineering experience, you are probably in your mid to late twenties.

The career satisfaction inherent in these positions will be matched only by large company benefits and the rewards, not least of which is the membership of a successful team in an exciting growth area with a progressive company.

For further information and an application form, please ring: David Baker or Will Morrish on Reading (0734) 387025 or 387005 or 387017. Alternatively send a full c.v. to David Baker, Digital Equipment Co. Limited, PO Box 131, Reading RG2 0TS. Ref: R/C/S/018.

digital



PROJECT MANAGER £13K Berkshire

Working for a manufacturing company, the successful applicant will have proven experience of project management, preferably having worked in a manufacturing environment, with experience of DL/1, Real-Time and Database Design.

APPLICATIONS PROGRAMMER To £9K Hampshire

An opportunity for the right applicant to move into the technical support area of this Univac 1100 financial organisation.

SENIOR ANALYST PROGRAMMER To £12K Middlesex

Major manufacturing company with large IBM mainframe. Applicants must have a minimum of 5 years in D.P., of which at least 2 years will be on CICS, as well as a knowledge of analysis and design. This is a demanding senior position with an excellent benefits package.

PROJECT LEADER To £12.5K Middlesex

Working for a leading manufacturing company, entering a new phase of systems development, the person appointed will be a self-starter capable of motivating a small team and responsible for the development and implementation of the company's manufacturing system. Experience of production and process control is essential.

PROJECT LEADER To £14.5K South East England

The successful applicant will be in their early thirties, preferably with an ICL background and previous involvement of on-line system, together with experience in a supervisory position, either in an insurance or financial environment.

ANALYSTS To £13.5K North West London

A large retail organisation offering good career prospects to Analyst with previous experience of working in a sales or financial environment with sound DL/1 experience.

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Experience of large ICL hardware and on-line systems to act as deputy to Project Leader working for large insurance organisation.

SENIOR PROGRAMMER To £10.5K North West London

A manufacturing company in Middlesex wishes to appoint a Senior Programmer with a minimum of 4 years' COBOL programming experience on Honeywell Level 66 hardware ideally with GCOS, IDSII or IDSII, TDS and TP experience would be an advantage.

PROGRAMMER To £7.5K Buckinghamshire

An opportunity exists for a Programmer with a minimum of 1 years' COBOL experience, ideally on Univac 90/30 hardware, working in a commercial environment.

For further details please contact: Bridget Kitchie, Shubrooks Recruitment Services, Alnmara Priory, Alnmara Road, Lyne, Nr Chertsey, Surrey, KT16 0BH. Telephone: Chertsey (09328) 66612/67531. Licence No. SE6806.



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£9-10K.

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The successful applicant will have 4-5 years' experience, a knowledge of COBOL and will currently be earning at least £8.5K. A degree, or an HND level qualification is required. Relocation assistance is available. Ref: W504

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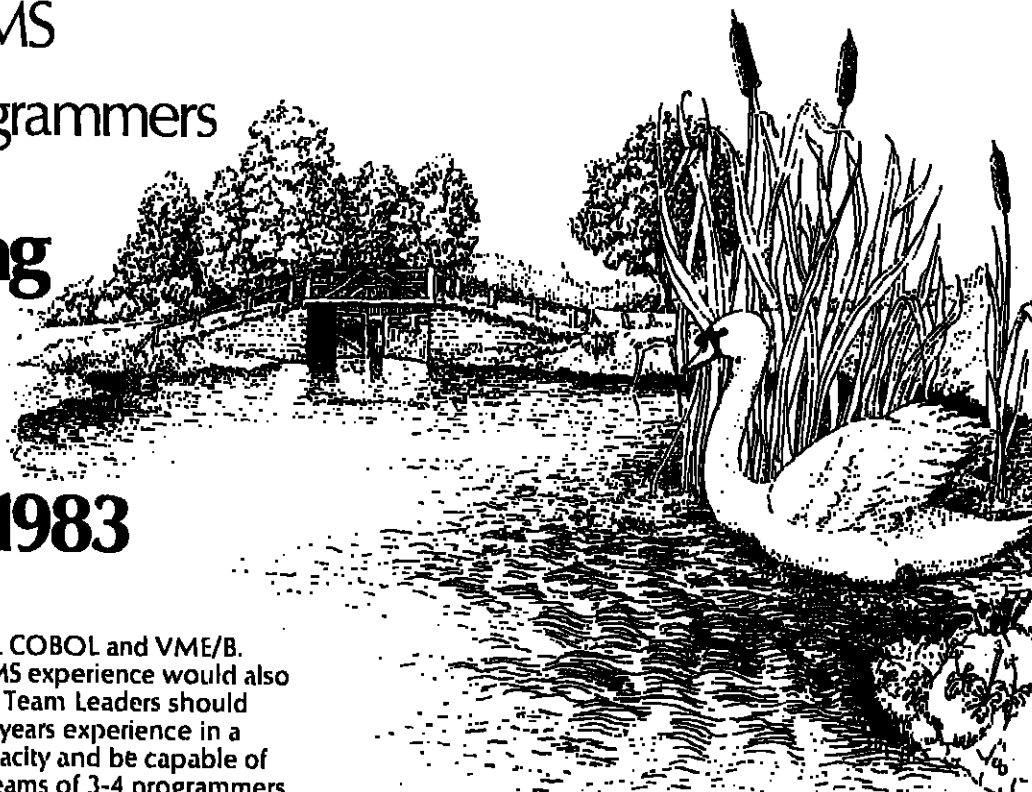
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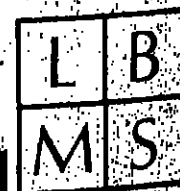
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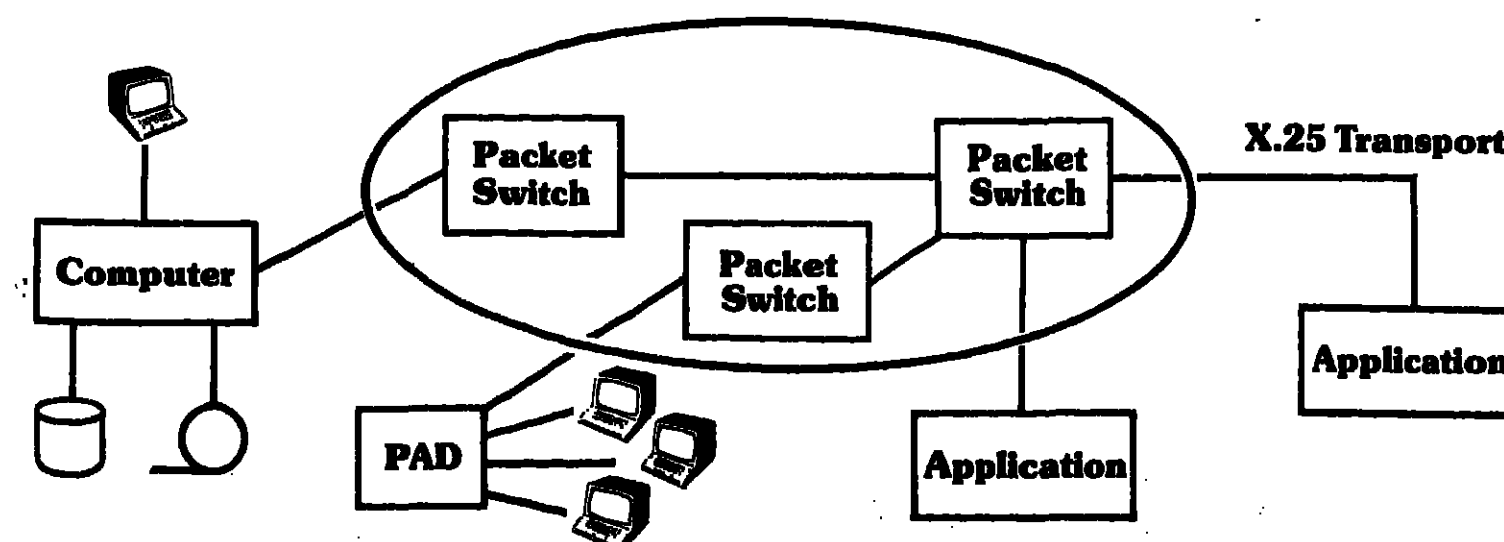
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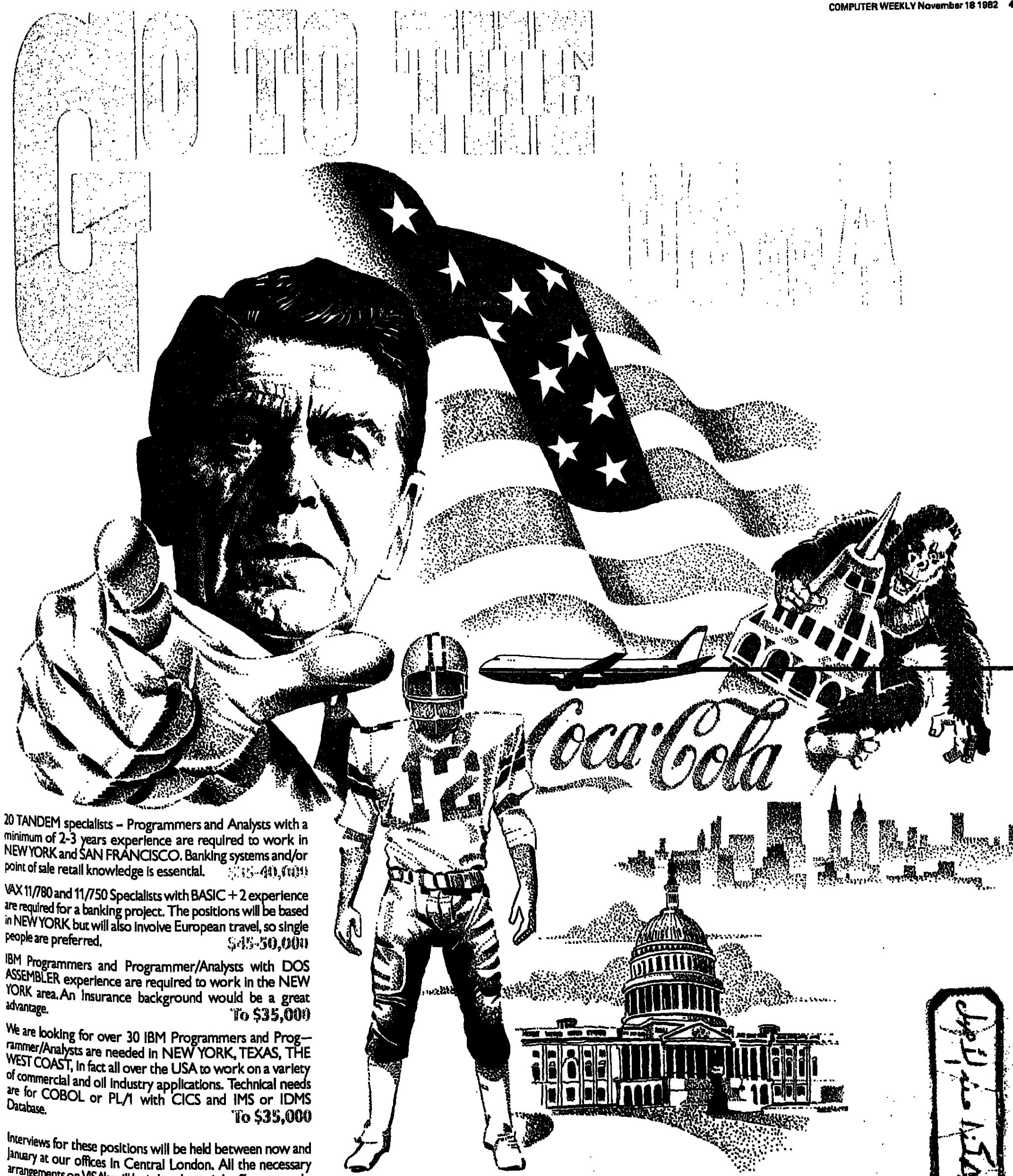
In all cases you should telephone Janet Chilvers on 01-734 7394 during office hours or on 01-359 4997 evenings and weekends to register your interest in the positions. Janet will also be happy to talk to any other experienced people who would like to go to America.

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For immediate consideration and to arrange initial interviews, please call Evelyn Harris on 01-935 0671 during working hours or submit a detailed career resume to her at our London address if you prefer.

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PL/1 PL/1 PL/1

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Salary at a rate of £8,500 p.a. Apply by letter to: The Headmaster, Great Bankley High School, Barrow Hall Lane, Great Bankley, Warrington, Cheshire. Closing date 29th November, 1982. (1724)

Dec or DG Analyst/Programmer

with some commercial experience. Salary to £9000. Write giving career details to: The Managing Director, Fortek Computers Ltd., Collier House, Fort Wellington, Fareham, Hampshire, PO15 8TX. (1728)

Nottinghamshire County Council

Business Analyst

Circa 13K

SW1

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The successful candidate will have proven experience of seeing projects through from systems outline to implementation, be skilled in dealing with users at all levels and have had some previous involvement with user procedures. Experience of insurance systems and some knowledge of Data Analysis/Database is desirable, however, training will be given in this area.

The salary offered is around £13,000 and there is a substantial benefits package, including LVs, pension, B.U.P.A., season ticket loan and flexi-time.

Space is limited yet we have plenty more to tell you, so for more information please telephone Sandra Herah on 01-734 7394 during office hours, or on 01-456 6988 evenings and weekends.

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(1678)

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- Responsibility for the normal operation of the computer department, including start-up and close-down procedures, security, job scheduling, data control etc.
- Systems development including advice on possible additional applications and liaison with the Sales Manager and Chief Accountant concerning user requirements.
- Supervision of operators.

Use is envisaged that suitable applicants for the position will be over 25 and already have experience of IBM System 34 in some capacity. The ability to get on well with other members of staff is essential and some knowledge of programming would be an advantage.

The appointment carries a salary of circa £9,000 per annum, one month's bonus at Christmas and four weeks annual leave. The company operates a non-contributory pension scheme. Applications, giving full personal and career detail should be sent in writing to:

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Salary: £8,955-£12,818

(Level of appointment and starting salary dependent upon qualifications and experience.)

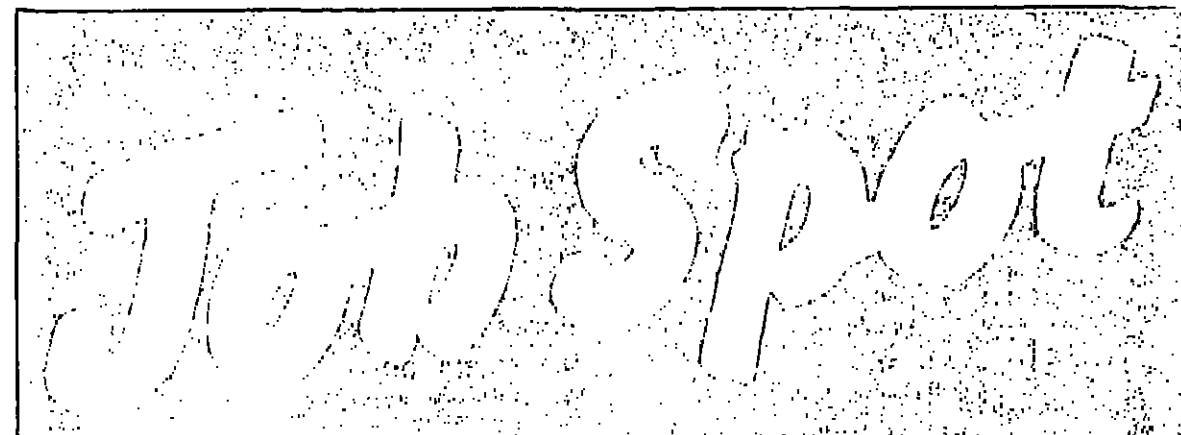
Applicants for the above post should possess a good honours degree, together with appropriate industrial, commercial and/or research experience.

The successful candidate will be required to teach to honours degree level on the new Computing and Information degree course, and should be able to offer specialist knowledge in applications of information technology such as distributed processing, database systems, management information systems and/or business applications.

Application forms to be returned by Friday, 3rd December, 1982, can be obtained with further particulars from the Personnel Officer, Plymouth Polytechnic, Drake Circus, Plymouth PL4 8AA. (1691)

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PROGRAMMER ANALYSTS
TOP SALARY

Our client, a well known and established manufacturing company with locations throughout the UK have agreed a strategy increasing their commitment to DP services. Current hardware is based on two IBM 4341's running under DOS/VSE and the company would like to hear from Programmer Analysts with around two years' experience on IBM mainframes supporting Cobol. Candidates should have the ability to write and design systems in an on-line environment and a knowledge of CICS or DL/I though not essential would be advantageous. In addition to an attractive salary, a range of benefits are available normally associated with a company of their standing.

LOCATION: OXFORDSHIRE JA808/1

HFC Trust
PROGRAMMERS
to £8,500

HFC Trust Limited are a major consumer finance and banking service organisation with over 140 branch offices throughout the UK. Increasing business has created a requirement for a number of Programmers to complete a development team now implementing a system designed as the basis of a network supporting all the UK branches. Applicants should have 18 months' IBM COBOL experience, with a background in any one of the following areas - CS/VSE, JCL, CME DL/I or Easytrieve. In addition to salary there are a number of benefits normally associated with a financial institution including non-contributory pension, BUPA and free life assurance.

LOCATION: BERKSHIRE JA808/2

dp
Confidential Reply
PROGRAMMER ANALYST
to £10,500

One of the world's leading manufacturers and suppliers of photographic materials and equipment are seeking to expand with the addition of a Programmer Analyst. Ideal candidates will have spent a minimum of two years' programming in Cobol and had an exposure to analysis in a commercial environment. The current hardware strategy is based on a range of Honeywell equipment and therefore knowledge of GCOS and TP86 would be highly desirable. A familiarity with the principles of DBI would also be advantageous. In addition to salary there are a number of large company benefits which will include assistance with relocation.

LOCATION: OBERHIRE JA808/3

OCL
SYSTEMS PROGRAMMER
£ excellent

Overseas Containers Limited, a world leader in container transport, has a requirement for ambitious Systems Programmers who are capable of exploiting their experience in an innovative and dynamic environment. The ideal candidate will have a thorough knowledge of DB and TP software (preferably IDMS, CICS and VTAM) and will form part of the TP support team. This team will be involved in major software upgrades to support an expanding TP network. Software plans for the coming year include installation of NCP/TFAP, ACFT/VTAM version 8, MVS/SPS and CICS 1.6. OCL offer excellent salaries and the usual benefits associated with a large organisation.

LOCATION: LONDON JA808/4

dp
Confidential Reply
Systems Designers
to £18,500

Our client has an international and dynamic reputation for designing and building fully integrated software and engineering systems. New orders have provided interesting opportunities for Systems Designers to work on the development of display and data handling systems for advanced technical applications. The successful candidate should have around seven years' systems design and implementation experience, a developed understanding of real time software in a mini/micro environment, and an ability to convey ideas and concepts effectively. Additionally, some knowledge of hardware and electronics would be advantageous, but not essential. Company benefits are generous including relocation, flexible working hours and five weeks holiday.

LOCATION: ESSEX JA808/5

MPI
PROGRAMMER
to £18,000

Microcomputer Products International are leading suppliers of software for OPM based micro's. Planned expansion has created the need for an additional Programmer to provide customer support and develop programs and systems, utilising an extensive range of microcomputers. The successful candidate should have gained around five years' programming experience in a large mainframe environment supporting Cobol. In addition a knowledge of Assembler is desirable and applicants will be able to demonstrate effective user liaison skills. Salary is in a range according to experience and in addition to usual benefits this position will attract free membership of BUPA.

LOCATION: BARKING JA808/6

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(1684)

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(1675)

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The Commission which is responsible for the external audit of all Scottish Local Authorities, is seeking to fill a vacancy for a Computer Auditor in its Hamilton-based team. The work covers a wide variety of installations and offers the opportunity to gain valuable and extensive experience in computer audit techniques.
The successful applicant will probably be a graduate with post-graduate experience in programming and systems analysis, preferably in a financial environment.
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A certain amount of travel is involved and it is possible that certain projects may involve overnight stays away from base. Suitable allowances are paid in this respect.
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Application forms, which should be returned by 22nd November, can be obtained (Quoting Reference 8223) from:
The Secretary, Accounts Commission
18 George Street, Edinburgh EH2 2QU
Telephone 031-228 7346

(1691)

Accounts
Commission

COMAG

PROGRAMMER/ANALYST

Strong Cobol background plus
Data Base experience

Salary: Circa £10,000 p.a.

Location: Uxbridge area

Our client is Comag, who are the largest independent magazine distributors in the United Kingdom, with worldwide distribution interests. Their small Systems Development Group is based in West Drayton. Hardware used is an NCR Criterion and a Data Base system using TOTAL has been developed.

Comag now wish to recruit a programmer/analyst who will:

- * have between two and three years' Cobol experience
- * have had some exposure to Data Base
- * enjoy the challenge of working in a small team where initiative is welcomed
- * be anxious to develop analytical skills.

Any candidate with experience of TOTAL would have a significant advantage. Future developments are significant. Comag use management services as an integral part of their company development, and the company is totally dedicated to data processing.

This is a particularly interesting opportunity for somebody who, whilst enjoying the small team environment, will benefit in experience terms from the major computer developments that are taking place. If you feel that you could make a contribution in this environment please send curriculum vitae to John Goldsmith



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Demand for good, technical staff is stronger than ever. Having concentrated our business on recruiting high calibre people for leading companies in computer technology we are under pressure from every direction to find enough experienced people to fill the known vacancies. Many of our clients have outlined major expansion plans which are constrained only by their ability to recruit experienced computing specialists. If you have from two to ten years experience in software design and implementation, preferably with mini/micro experience using an assembler and/or

block structured language, we would be pleased to hear from you. If your motivation is purely financial, or you are a job hopper or your salary expectations are out-of-line with your experience, our clients will not be interested and, therefore, we will not be able to assist you. Our clients have learned to trust the screening and selection criteria we use. We intend to maintain that trust. Previous applicants have appreciated this attitude. Some have gone on to become current clients. We couldn't wish for a better reference.

Banking Comms.

London £9-11K+
The communications centre of an International Bank requires additional programmers for the enhancement and support of their DEC and IBM Series 1 based systems. Large message switch and processing is via PDP11/70 and PDP11/34 systems with Series 1 links to B.T. telex. Macro-11 and IBM assembler required. Attractive bank benefits include low interest mortgage, free pension and restaurant.

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N. Essex £8-12K
This expanding, turnkey vendor of Tandem computer systems is seeking highly motivated software people to work on advanced applications using Tandem equipment. Experience in communications and screen based applications using COBOL is required. The company has its own in-house Tandem system providing training on this very popular equipment. Candidates must be presentable.

Team Leader

Beds. to £14,000
We wish to recruit an operating system software specialist, preferably with UNIX experience, who will build then lead a team which is to provide a UNIX related environment on a range of mini-computers. The successful candidate will combine technical expertise with leadership and external communications skills, probably gained with a manufacturer or large systems house. Reloc. assistance.

Pascal M68000

Berks. £8-10K+
A number of software people are required to fill new vacancies created by expansion. Development is on PDP11/40 RSX11 using Pascal and Macro-11. The target machine is the M68000 micro for specialist comms. products in this high growth market. Two to five years experience is required for positions from programmer to team leader level.

S/W Support

W. M. Essex £12-14K + car
Take this opportunity to join one of the most successful computer companies of our time. You will need several years' technical software experience to include: real time, data communications and/or database systems. Analysts with banking or financial systems experience would also be of interest. You cannot fail to be impressed by this client. Higher salary but no car for City office location.

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C. London £10-12K
A very prestigious company in international management consultancy and accounts is seeking an experienced commercial programmer for their in-house D.P. function. The company uses dual Prime minis, INFO and ADMIN for major applications. Experience in personnel and pension systems useful. Excellent prospects and benefits. This is an attractive career development move.

Project Leader S/W Releases

N.H. Counties c. £13,000+
A qualified software specialist is required to build and lead a new team which will be responsible for the introduction of new software for trial. The successful candidate will be capable of dealing with internal technical and marketing staff as well as having a good client contact manner. Organising, planning and scheduling ability essential.

Field Engineer Adv. Micros

London to £12K + car
A British company with an advanced, flexible, micro-based business system is expanding into more markets and proving that home grown quality systems can be successful. A senior field engineer is required for the London office. The successful candidate will be given the opportunity to build the southern region F.E. team as the company grows.

DEC/RSTS Commercial

Avon £8-10K
A medium sized systems house specialising in PDP11 based commercial applications requires additional staff for continued expansion. Candidates must be capable of preparing specifications of clients' requirements and implementing systems to schedule. A positive manner for client contact is essential. BASIC is essential as is previous RSTS experience. Some Macro-11 useful. Attractive location.

Comms. Support

London c. £14,000
This is a very attractive opening for a software communications specialist to join a computer manufacturer in a front end support position. You will spend approx. 18 months on secondment to a City institution with the security of a permanent position in a rapidly growing company. A "nuts & bolts" networking person is required.

CP/M Systems Support

London £8K + car
A small, successful business systems development company which has specialised in commercial applications for CP/M based machines is seeking an experienced programmer who will be responsible for installation, training and support for the company's products. The position will appeal to a bright, young person who wishes to make a personal contribution to a company.

S/W and H/W Designers

Wilt. £8-12K
A major company in the development, manufacture and marketing of office systems requires additional technical staff in building project teams for current and future development. Micro based systems in W.P. and L.A.N. are being produced. This attractive sector of the market continues to expand. Relocation assistance where appropriate, plus attractive company benefits.

DEC Prog/Analysts

Beds. to £10,000
The working environment, the company and its products all rate A.1. with this client. Experienced RSX11/Macro 11 programmers will enjoy working on applications and systems for computer controlled analysis and measuring instruments. There are opportunities in special systems and standard product development. A physics degree would be useful. Some international travel.

Programmers Minis/Micros

Berks. £7-12K
A successful company with a product having a special place in the communications and travel industry, requires several programmers at different levels to join existing development teams. Areas of expertise relevant include Z80 Assembler, PDP11 systems, UNIX and C, PLZ, Viewdata, CP/M, comms and travel agency applications. Excellent benefits include special holiday discounts.

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Berks. £7.5-12K
A very small, relatively new company has developed a sophisticated D.B.M.S. to run on the Sirius 16 bit micro. The product is written in Pascal and incorporates unique features which give it an attractive marketing advantage. Bright Pascal programmers are required to work on system tuning and refinements. Continued system development is planned for the future.

Support Analyst

London £8-10.5K+
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Comms S/W Design

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The person required will be responsible for creating design documentation from a formal statement of user requirements and will probably supervise the work of other programmers.

It is expected that applicants will have extensive Online/Database orientated experience in an IBM mainframe environment, preferably having worked with structured programming techniques. In addition to this, the ability to communicate effectively not only with programmers and analysts, but also with the users is essential. Experience of financial applications is desirable. It is likely that the person required will be aged 25-40 and have at least five years' relevant Data Processing experience, most recently with program design at a senior level.

Conditions of employment and benefits are excellent including Non-Contributory Pension, Subsidised Restaurant and BUPA Membership. After a qualifying period there is an annual bonus and staff mortgage scheme.

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PROJECT LEADER

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As a result of expansion in their commercial division, they now seek an ambitious Analyst/Programmer with at least 3 years' experience of programming and systems design using BASIC+ or +2 on DEC hardware. Experience of payroll, stock control and similar applications would be advantageous.

up to £12,000
(review March '83)

City of London

As Project Leader, you will be responsible for most aspects of the development of sophisticated systems using the latest DEC hardware and software methodology, encompassing pre- and post-sales support, systems design, programming and team leadership; a high degree of involvement with the company's clients is envisaged, and you will be encouraged to take an active part in the development of new business areas.

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For further details, contact Barry Latchford on the number below or on Newick (082572) 3197 evenings and weekends, or send a brief c.v. quoting ref. 508

Barry Latchford Associates Tel. (0444)
Blair House, 7 Hazelgrove Road, Haywards Heath, Sussex RH16 3PH 459815/6/7

SALES APPOINTMENT

Due to expansion of our business we require an additional sales professional to assist us in the sales and marketing of our services.

Ideally candidates should have previous experience of software sales within the computer industry coupled with a demonstrable track record of achievement. A background of hardware or Bureau selling would be an asset but is by no means essential.

Our company has an excellent track record within the DP industry and previous clients include many household names. Company growth has been steady and further expansion is planned.

Based in London this position carries an excellent basic salary plus good commission and should lead to a total package of around £25,000 per annum on quota earnings. A company car and full benefits are also provided.

If you have commitment, imagination and drive together with a desire to work within a good team then we would like to hear from you.

To arrange an informal interview, contact Chris Morrow on 01-837 0451 (daytime) or 01-267 9409 (after 7.30pm)



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(1829)

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£25,000 AND COMPANY CAR

Please supply complete details to Peter Hubble or Alasdair Scott quoting reference HSE/2112.

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(1728)

SMR

Sales & Marketing Recruiters Ltd

A Sales and Marketing Services Company

SALES EXECUTIVES

Are You Destined For Greater Things?

Our Client is one of the really big names in the Computer Industry whose research and development investment alone is in excess of £100M per annum. This prestigious company is a renowned pioneer in computing technology with a product range from mainframes to micros and a world leader in communications and distributed Network systems.

The attraction of this company to the successful professional salesman is its truly sales and marketing orientated environment rather than the bureaucratic mentality that prevails among many of its competitors. It's commitment to sales and product training implicit in its own extensive education centre and the continual scope it provides for creative and strategic selling within a Multi-tier business environment calls for the highest level of professional selling skills.

Job opportunities now exist in the

NORTH WEST - MIDLANDS LONDON & SOUTH

If you are a keen salesman with a successful selling record in any sector of the computer industry, especially mini computers or mainframes, and seeking to move to a high level of product or company experience we would like to meet you.

Your earnings will include a basic salary of up to £12,000 per annum with on-target earnings of up to

£24,000 & CAR

Please supply complete career details to Peter Hubble or Alan Williams quoting reference HSE/1112.

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THE ASSOCIATED EXAMINING BOARD

Computer Operations Supervisor

A supervisor is now required to oversee a busy Operations Section comprising four operations staff. The Board utilises a Honeywell Level 64 DPS computer together with a comprehensive range of peripheral and terminal equipment for the administration of public examinations. The configuration is shortly to be enhanced and Database systems are being prepared for installation during 1983. The successful applicant will have several years' operating experience of which at least two will have been in a supervisory capacity. Experience should have been gained in a medium-sized mainframe installation ideally including a local communications network. Experience of Honeywell computers would be of considerable advantage as would the ability to write J.C.L. instructions.

This post is on the salary scale of £5,557 per annum rising by six annual increments to £6,871 per annum, the point of entry being determined by qualifications and experience. There is a contributory Pension Scheme and other benefits include Luncheon Vouchers, free car parking, 28 days' annual leave and a subsidised staff restaurant. Application forms may be obtained from the Personnel Manager, The Associated Examining Board, Wellington House, Station Road, Aldershot, Hampshire, (Tel: Aldershot 25531), to whom they should be returned, marked 'Private and Confidential', not later than Friday, 3rd December, 1982.

(1729)

EAST MIDLANDS

Systems Analyst & Programmer
Permanent Jobs

CLAYTON Lefcoster
COMPUTER (0633)
SERVICES 656148 (Agony)
(1181)

CAREER OPPORTUNITIES

for Programmers, Analysts, Sales Executives, Computer Engineers, etc.
Phone Colin Allen on 061-982 8341 (Transfer charges if necessary) or send C.V. to Selection (Recruitment Consultants), 93 Washway Road, Sale, Cheshire M33 9TC.
(1182)

SCOTTISH HEALTH SERVICE COMMON SERVICES AGENCY

The Agency has now established a new Computer Centre in Edinburgh with an ICL2900 running VME2900 and DME under C.M.E. A planned expansion of computing systems has created the following new posts:

Senior Systems Designer

(Scale 14), candidates for this post will be educated to degree level or equivalent with experience as a project leader. Knowledge of I.C.L. software and formal training in systems design desirable. Ref. U462/CW.

Intermediate Systems Designer

(Scale 13), candidates for this post will be educated to degree level or equivalent with experience as a project leader. Knowledge of I.C.L. software and formal training in systems design desirable. Ref. U462/CW.

Basic Systems Designer

(Scale 12), candidates must have either formal computing qualifications or at least one year's experience. Knowledge of Cobot essential. Fortran, Basic or Plesab desirable. Ref. U464/CW.

Programmers

(Scale 11), candidates must demonstrate ability to assume charge of this expanding section. At least three years' experience of control work and formal qualifications in computing desirable. Ref. U465.

Date Control Supervisor

(Scale 10), candidates must demonstrate ability to assume charge of this expanding section. At least three years' experience of control work and formal qualifications in computing desirable. Ref. U466.

For further details and an application form candidates should write to the Recruitment Section, Common Services Agency, Trinity Park House, North Trinity Road, Edinburgh EH6 5SE. All forms must be returned by December, 1982. Please quote appropriate reference number for post applied for.

(1730)

SALES BIT

Quality of Management

They may be an audience, but don't pay to get in!

MANY sales managers dread the thought of holding a sales meeting. For some it is a real fear of addressing an audience, for others it is the feeling of inadequacy at being unable to control a meeting, while in other cases the real problem is lack of ideas for putting a sales meeting together.

When you think about it, such feelings are completely unjustified for the sales manager has everything in his favour. Why should he be nervous when addressing people who are by no means strangers, indeed, they are subordinates whose very position suggests that their total spectrum of sales experience is likely to be less than that of their manager.

After all, they may be an audience but they didn't have to pay to get in!

Some managers are bad at speaking in public and for them a formal training course could be money well spent. However, for those who cannot be bothered with such things I can think of no better advice than simply concentrating on being yourself.

Don't be a copyist or expect to achieve the oratorical skill of Michael Foot or Arthur Scargill. If you really do get nervous when addressing the troops why not use the time-honoured public speaking trick of choosing a single (or even

married!) member of the audience and addressing the whole presentation to him? Alternatively, treat the assembly as if it were one person with a single identity. Many people find this technique helpful in overcoming the potential intimidation of an assembled crowd.

So, what is the purpose of a sales meeting? Now think carefully before you answer that one. Do your sales meetings occur because you always have one the last Friday in every month, or because there is a particular objective to be achieved? Whatever happens in a sales meeting, the participants must depart feeling more confident and enthusiastic about their ability to achieve sales success with their company's products than when they went in. Maybe the predominant subject of the meeting is unavoidable bad news, but at least those present should come away with a positive

reaction. They should leave the meeting completely convinced that they have the ways and means to handle whatever problems exist.

If the competition has brought out an amazing new product that has taken the market by storm, the sales manager must make sure he has discovered all the weak points, disadvantages and uncertainties as well as identifying the relative strengths of his own product before he calls a sales meeting.

Most sales meetings fail because they are not really sales meetings at all; they are more like bureaucratic orgies wallowing in administrative irrelevance and pedantic trivia. They are often a boring and demotivating collection of matters that should be dealt with in different circumstances.

If you must take Fred Arkwright to task about the high living implied by the nature of a recent expenses claim, do it some other time, like when you are out on territory with him. Besides which, such conversations in front of other colleagues are the height of bad manners and negative management.

If the sales meeting is the only time you see your salespeople (which means you shouldn't be in the job!) then take the opportunity of discussing the matter before or after the sales meeting.

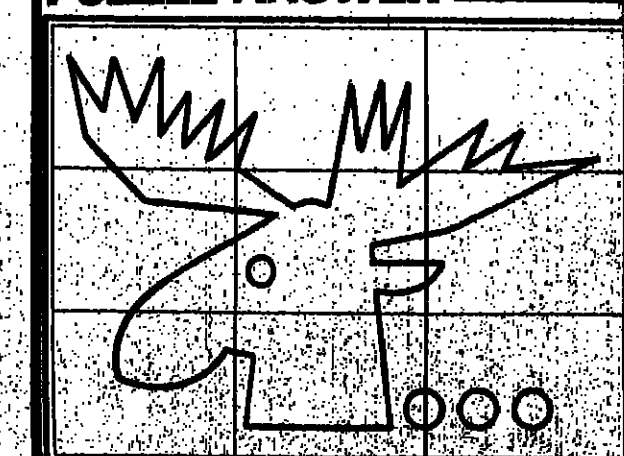
Okay, sometimes administrative matters have to be discussed. If that's the case be sure to allocate a fixed time for the subject and let everyone know how long it will last. Once the time has expired chop it off completely.

It is also a good idea to set a target completion time for the end of the meeting so that everyone knows where they stand, especially yourself. Also bear in mind that any meeting over two hours in duration will begin to lose its effectiveness.

Above all, make your sales meetings interesting, even exciting if you can. Give them real meaning for all concerned. Don't allow the monthly sales meeting syndrome to degenerate to the point where your salespeople groan at the prospect of another weary session, where they become reluctant to attend.

Alan Williams

PUZZLE ANSWER



1711-1712

Switzerland

Telecommunications Software Development

English Speaking Project

We have been retained by an international telecommunications company to recruit several SOFTWARE ENGINEERS to develop and implement software for a NEW PUBLIC DATA SWITCHING SYSTEM, involving working on Operating Systems, Diagnostics, Telex applications and X25 Interfaces.

Candidates should have a degree, 18 months plus Assembler experience, preferably in a Telecommunications environment on minicomputers. An in-depth knowledge of real Time Operating Systems would be advantageous.

Successful candidates may look forward to enhancing their career prospects, gaining valuable experience in an international environment.

Interviews will take place in London in December. For further details on the above company, conditions of employment and living in Switzerland. Please send a C.V. or telephone for application form quoting the reference number. CW46/1

RECRUITMENT SERVICES

01-399 9183

Datamatics, Freeport, Surbiton, Surrey KT6 6BR

FORTRAN? SUPPORT CONSULTANT VIDEOTEX

C. London to £11K + Car

Our client is the European Headquarters of one of the largest computing services organisations in the world. Totally committed to the development of leading-edge, on-line systems the company is seeking to recruit a Customer/Sales Support Specialist in the area of Videotex.

Running on DEC equipment and accessible in either a stand alone capacity or as a bureau service the system is probably the most advanced available in the UK.

Working closely with the sales force the Support Consultant will be the point of contact between the user and the company. He will be involved in analysis and design work prior to systems installation and in user support thereafter. The successful applicant will have the following skills:

- Sound knowledge of Fortran
- Mini computer experience (useful but not essential)
- Good educational background
- Outgoing personality and the ability to communicate.

In return for this experience the position offers an opportunity to work for one of the most successful and dynamic service companies in an area of technology which is becoming increasingly important. Interviews will be held in Reading and Central London. For further information phone Andrew Cousins or write enclosing full C.V.

McCOURT COUSINS LTD, 27-29 Greyfriars Road, Reading, Berkshire

Tel: Reading (0734) 595346

MINI/MICRO PROGRAMMERS

Our client Format Communications, a small but established company in the field of message switching, have now embarked on a major expansion phase creating opportunities at all levels for the support of existing products and a major development project.

Candidates with one-five years' experience, should be able to work with the minimum of supervision, communicate clearly, and have experience in some of the following areas: Mini/Micro computing in a technical environment, Communications, Assembler/Pascal, Real-time Systems, Word Processing.

Based in Uxbridge. Salaries will reflect responsibilities and previous experience. Contact Richard Gaskell on the number below.

FREELANCE PDP 8 & 11 STAFF FOR RSTS/E BASIC +, BASIC + 2, RMS, DOS PAL-8 ASSEMBLER

01-732 2944 (1230)

TAMESIDE COLLEGE OF TECHNOLOGY COMPUTER STUDIES UNIT

LECTURER I in COMPUTING

Required to contribute to the work of the Computer Studies Unit which includes NCC Threshold Course, BEC/TEC National Certificate Course, MBC Work Skills Course as well as a wide range of part-time courses and serving work for other departments.

Further details and application forms are available from:

The Principal, Tameside College of Technology, Beaufort Road, Ashton-under-Lyne, Lancashire OL5 8HX (Greater Manchester) to be returned no later than 14 days after the appearance of this advertisement. Ref: T.E. 2106/CW (1716)

OPERATIONS SUPPORT IBM 4300-OS/VS1

LONDON

Due to continued expansion, an excellent opportunity has arisen for a highly-motivated individual to perform an important liaison/support function with our prestigious London-based client. We seek candidates with in-depth technical knowledge, the flexibility to absorb new skills in a ever-changing environment and previous supervisory experience gained in this type of role. You should have the ability to maintain a high standard of documentation and to communicate effectively at all levels. The successful candidate will be assessed of involvement and responsibility within a progressive organisation, genuine long-term prospects, a competitive salary and attractive benefits package. For further details, telephone now or send your C.V. to the address below, quoting ref. J1485.

COMPUTER TWO THOUSAND LTD
D.P. Recruitment Consultants
217-218 Tottenham Court Road
London W1P 9AF
Tel: 01-636 7584 (24 hrs)

We are Scientific and Business Systems, a systems/software house established for over 12 years. Originally specialising in project work and package development, SBS became one of the leading specialists in the Honeywell software market. Through planned diversification, we are now successfully involved in other areas including Consultancy, Turnkey Systems and specialist Advertising and Recruitment.

With this experience and commitment, we feel able to offer a genuine consultancy service, by understanding the requirements of both client and applicant. The following positions are an example of some current assignments. However, whatever your experience, we would be pleased to discuss your present career ambitions and offer you a professional and discreet service.

IBM 34/38 PROGRAMMER

Working in a small friendly environment, our client offers you an opportunity to develop a range of financial/commercial systems vital to their continued success. Based in London, our client is a leading 'brand name' company with a very high percentage of on-line systems. As Programmer you should have at least 2 years' Cobol and for the Team Leader A/P an additional 2/3 years in analysis. Quote ref. A.H. 620.

RPGII A/P BANKING

We have been retained by a large International Bank to discuss opportunities with experienced System 34 Analyst/Programmers. Due to expansion of their computer systems and increased user demand, they are interested in discussing high-level roles with applicants who have at least 2 years' relevant technical knowledge either in a Banking, Insurance or Financial environment. User liaison skills are of course much used in their particular business. Please quote ref. MO 562.

SYSTEM 34/38 PROGRAMS+A/P

We have an excellent reputation in the IBM GSD market and therefore have access to an interesting variety of positions in all application areas including: Manufacturing, Insurance and Accounting systems. Some clients will be retraining individuals from RPGII to RPGIII, and also offering analysis experience to programmers. Please quote ref. M.G.N.

IBM 34/38 PROGRAMMER

On behalf of a world famous company, we would like to talk to experienced IBM Cobol specialists with strong on-line and/or Database knowledge. Our client is embarking on an ambitious and wide-ranging development programme including challenging new areas such as Point of Sale. Based in Central London, these positions are open to applicants with a min of 2 years' experience. Please quote ref. SG 584.

IBM PROGRAMMER

The commercial arm of a major technology company in Croydon are interested in young ambitious programmers, with between 1 and 2 years Cobol experience you will be given the opportunity to work in a CICS/DB1 environment with a positive attitude to training and career progression. We can personally highly recommend this organisation and ask you to quote ref. SG 578.

MINI COBOL

Due to the success of both these large minis, there is a strong demand for experienced Programmers and Analyst/Programmers. Our clients, who are based in London and the surrounding counties are particularly keen to discuss openings with applicants who have on-line and/or database experience, (though not essential). This is because a great deal of their current work is brand new and will incorporate fully the latest technology available. Please quote ref. AG.N.

All applications are accepted in strict confidence and we are able to offer preliminary personal interviews to all interested candidates. Please call us on the number below, quoting the relevant ref. We also have an answerphone from 7.00 p.m. onwards, if it is more convenient.

SBS RECRUITMENT

32 BEDFORD SQUARE, LONDON WC1B 3EG
01 580 3848 (24hr answerphone)

Major Account Sales

£30,000+ Realistic Earnings • Choice of Prestige Car • Negotiable Guarantee Period

Retained by one of the world's most exciting computer manufacturers, we have been asked to identify a number of seasoned professionals to complement an existing, highly motivated and extremely successful national sales force.

Our Client's UK penetration throughout 1982 has seen the continuation of what can only be described as an exceptional and unique worldwide growth pattern and the coming year holds every indication of even greater market domination in the field of on-line transaction processing and distributed data processing.

The future growth of the Organisation is dependent upon the ability to maintain the high calibre of individual already evident in the current sales teams—for consideration, therefore, your credentials will be examined against the following criteria:

- * Above average achievement in computer sales.
- * Experience of major company, high value negotiations.
- * Ability to acquire new business over long term decision periods.

Equally important are the personal attributes—the maturity to negotiate at senior level; the professional presence; the desire and tenacity to win in competitive situations.

The financial rewards are comparable to the best within the industry and you will find the spirit within our sales force highly stimulating—if you wish to share in our future success, please contact:

For positions in London and the South:
Peter Dudgeon on 01 935 0671 (24 hour answering service). Grace Baskeyfield on 01 891 1555 evenings.

For positions in the Midlands and North:
Clive Wadelin on 021 236 3781 (24 hour answering service) or 021 449 6125 evenings.

MIDLANDS
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LONDON
NORTH

Technical, Sales & Management Appointments
ESCR
Specialist Computer Recruitment Ltd

SOUTH
James House, 46 James Street,
London W1M 5HS
01-935 0671/486 0461

MIDLANDS & INTERNATIONAL
35-37 Great Charles Street,
Queensway, Birmingham B3 3JY
021-236 3781

NORTH
International House, 84 Deansgate,
Manchester M3 2ER
061-833 0427

BELGIUM
Avenue Louise 327,
Boite 4, 1050 Bruxelles
010 322-840 7151/71

HOLLAND
Willemsparkweg 92,
1071 H.M. Amsterdam
010 3120-760947

01 935 0671